

Service Manual

• DEQ-7500/US



ORDER NO.
CRT1462

DSP AUDIO PROCESSOR

DEQ-7500 **DEQ-7550**

US,EW

ES

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1. SPECIAL FEATURES OF THE DEQ-7500

Incorporating SFC*

Five Kinds of Sound Field Programs

- STUDIO
- JAZZ CLUB
- CONCERT HALL
- CATHEDRAL
- STADIUM

* SFC: Sound Field Control

Diverse Equalizing Function

① Parametric Equalizer

Allows four-band adjustment on front and rear output separately.

② Graphic Equalizer

Allows seven-band adjustment on front and rear output at the same time.

③ Parametric Bass/Treble

Allows adjustment of bass/treble on front and rear output separately or at the same time.

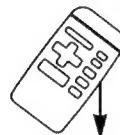
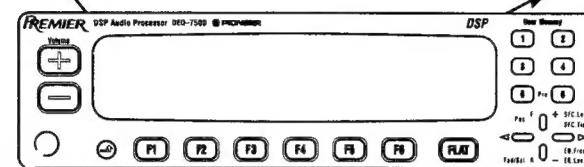
④ Parametric Subwoofer/Center

Allows adjustment of frequency and level of subwoofer/center.

⑤ Six Preset Memory for the User

- Memory Holding Function

- Memory Protect Function



Multifunction Remote Control

- ① Adjustment of Main Volume
- ② Equalizer Curve Control
- ③ Switching of SFC Mode, Effect Adjustment
- ④ Switching of Sources on Head Unit

Staging Function

Allows Selection of the Listening Position

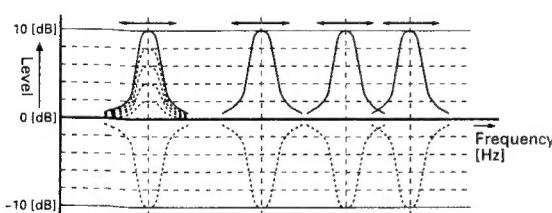
- Matches listening position of sound image to your position in the vehicle
- Image focus control enables fine tuning of the listening position of sound image to suit vehicle conditions.

Equalizing Function

The following three functions from the equalizing functions incorporated in the unit switch the sound to a digital signal for processing.

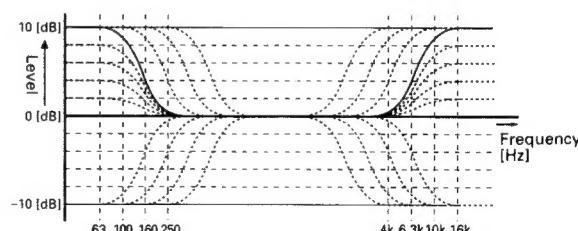
Parametric Equalizer

The parametric equalizer allows you to select four bands from 31 frequencies whose level you wish to adjust. It also allows separate adjustment of front and rear outputs.



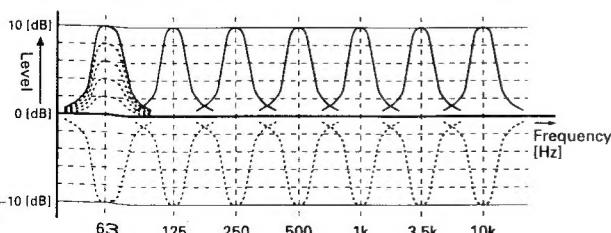
Parametric Bass/Treble

The unit's parametric bass/treble allows four stage selection of frequencies whose level you wish to adjust. It allows you to adjust the front and rear outputs separately or at the same time.



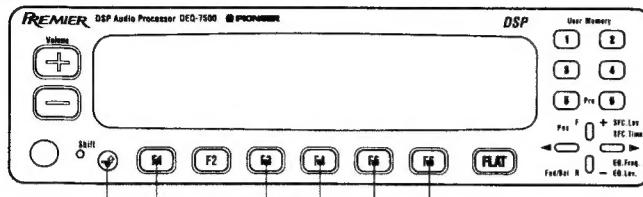
Graphic Equalizer

Allows you to adjust levels of preset seven bands.



2. SELECTING THE VOLUME-TONE CONTROL MODE

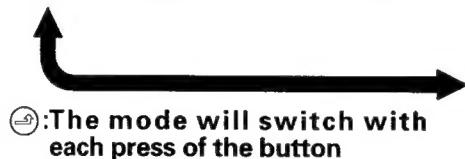
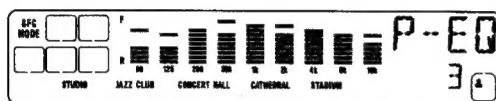
The unit incorporates the following modes for adjusting volume and tone. When setting volume and tone for each component, switch to the mode you wish to adjust first, using the illustration as a reference. For details, refer to the page number indicated in [].



Modes are switched using a combination of these buttons

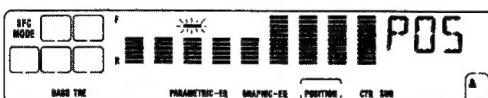
Spectrum Analyzer Mode

- Below are the four kinds of volume and tone is adjusted. Volume Adjustment [4], Fader Adjustment [4], Balance Adjustment [4], Sound Field Control (SFC) [5].



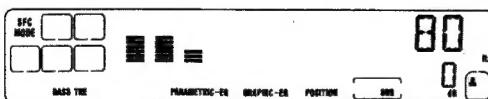
F5 : Listening Position Setting Mode [5]

- Adjust the listening position of the sound image. Refer to "Using Listening Position" on page 5 for details.



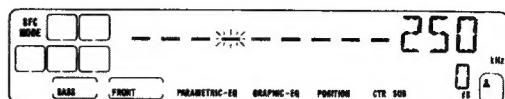
F6 : Sub-woofer/Center Setting Mode [9]

- Adjust frequency level of center and subwoofer output.



F1 : Bass and Treble Setting Mode [6]

- Adjust bass/treble on the front and rear output separately or at the same time.



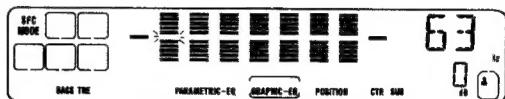
F3 : Parametric Equalizer Mode [8]

- Adjust parametric equalizer on the front and rear output separately.

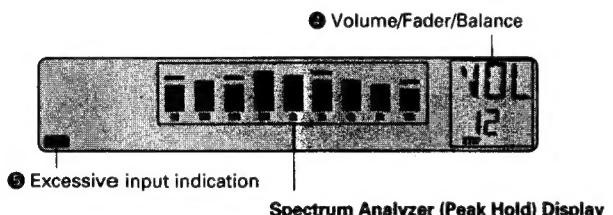
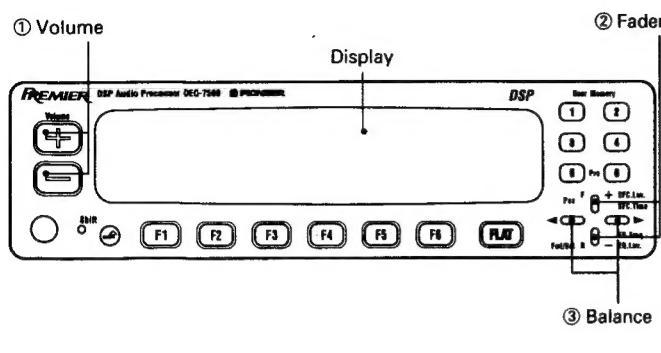


F4 : Graphic Equalizer Mode [8]

- Adjust graphic equalizer.



3. ADJUSTING THE VOLUME



Spectrum Analyzer (Peak Hold) Display
The power levels of the 9 frequency divisions are momentarily held and displayed.

Before adjusting the volume

When you use the unit for the first time, set the volume of the head units (such as the cassette deck) to the desired level using the following steps in order to adjust the total volume on the unit.

1 Press the (-) side of button ① to set the volume of the unit to "VOL 0 STEP".

2 Set the volume of the head unit to "23".

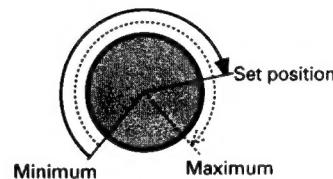
To adjust the volume on the head unit, refer to the Owner's Manual that accompanies the head unit.

Cautions in Adjusting Head Unit Volume

- When the head unit volume is excessive (excessive input to the unit), "CLIP" ④ will be indicated on the display as a warning. In this case, turn the volume on the head unit down to the point where "CLIP" is no longer displayed.
- When you feel a distortion in the sound even though "CLIP" ④ is not indicated on the display, turn the volume on the head unit down.
- The volume on the head unit will return to the initial setting when you remove the car battery or press the clear button on the head unit. In this case, set the volume again.

Note:

The volume's set point is not indicated on the display when you adjust the volume on the head unit by turning the volume control. In this case, set the volume control on the head unit to the position illustrated below, in accordance with step ②.



Adjusting the Volume

Pressing the (+) side of button ① increases the volume, while the (-) side of button ① decreases it.



Notes:

- Always keep the volume inside the car at a level that allows you to hear outside sounds.
- Avoid high-volume listening for long periods while the car engine is off or idling since this may exhaust the battery.

Adjusting the Fader

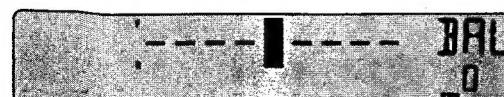
This function controls the balance between the front and rear speakers of a 4-speaker system. Pressing the upper side of button ② shifts the balance to the front speakers, while the lower side of button ② shifts it to the rear speakers.

For 2-speaker system, set to "FAD 0".



Adjusting the Balance

Pressing left side of button ③ shifts the balance to the left speaker, while the right side of button ③ shifts it to the right speaker.



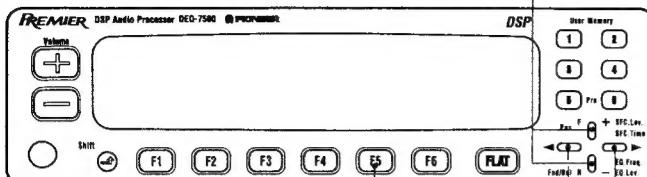
Notes:

- When you're adjusting fader or balance settings, the indicator will stop at the center setting.
- About 8 seconds after adjustment has been made, the display returns to its previous state.

4. USING LISTENING POSITION

Correction of sound image in accordance with your position in the vehicle

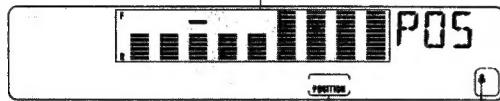
① Front and rear fine tuning (Image focus control)



③ Listening position

② Left and right fine tuning (Image focus control)

④ Image focus control display



⑥ Listening position setting mode

⑤ Listening position

The distances to the front and rear, and left and right speakers will differ depending on your position in the vehicle. Therefore, the time it takes for the sound from each speaker to reach the listeners will vary, resulting in destabilized sound image. For example, the direction from which the vocals are heard may be unclear.

This function allows you to adjust the level and the time lag in the sound from the front and rear, and left and right speakers, and stabilize the sound image.

Note:

The listening position is adjusted to match your position in the vehicle. However, other listening position may be more effective, depending on the model of the vehicle and the positions of speakers. Compare the sounds and set the listening position to the one that allows you to enjoy the most natural sound.

① Switch to listening position mode

(Refer to "Selecting the Volume-tone Control Mode" on page 3.)

② Set the listening position to match your position in the vehicle. Every time you press button ③, the mode switches as follows:

Driver's seat (Left hand drive) Driver's seat (Right hand drive) Front seat Front and rear seats No setting (The sound image listening position is not set)

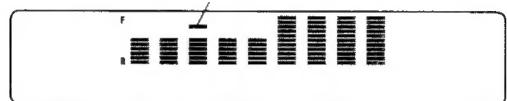


Note:

Setting is largely made by carrying out the operations up to step ②. Step ③ fine tunes the sound image listening point, enabling the sound to be set to the position where it is heard most naturally.

③ Use the image focus control function to fine tune the sound image listening point to the front and rear, and left and right directions.

This bar roughly indicates the sound image listening position



(Example: Indication of driver's seat (Left hand drive))

Pressing the upper side of the button ① allows fine tuning to the front, while pressing the lower side allows tuning to the rear. Pressing the left side of button ② allows fine tuning to the left, while pressing the right side of the button allows tuning to the right.

5. USING SOUND FIELD CONTROL

What is Sound Field Control?

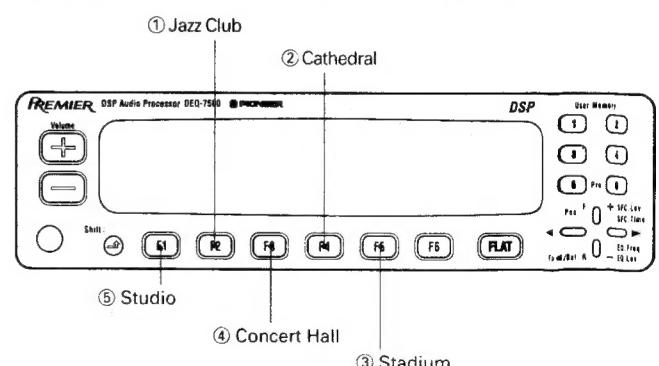
Creation of Sound Field

"Sounds" at a concert reach listeners from different directions and with different time lags. This is because the sounds resound in the space in the concert hall and resound off the ceilings and walls. But the sound field created in a vehicle is unique to the car audio. This is because it is not possible to obtain sufficient space or resonance in a vehicle. The DSP (Digital Signal Processor) incorporated in the unit processes sounds and creates five kinds of sound fields.

Note:

- As sound field control is most effective when the sound image is set at the listening position, refer to "Using the Listening Position" in the previous section to set the sound image at the listening position.
- Sound field control is more effective from the front output than the rear output of the unit. If you have a 2 speaker system, use the front output.

Using the Sound Field Control (SFC)



⑥ SFC Mode

⑦ Jazz Club ⑧ Cathedral

⑤ Studio ④ Concert Hall ③ Stadium

⑪ Studio ⑩ Concert Hall ⑨ Stadium

① Place the unit into spectrum analyzer mode. [See "Selecting the Volume-tone Control Mode" on Page 3.]

② Select the sound field program.

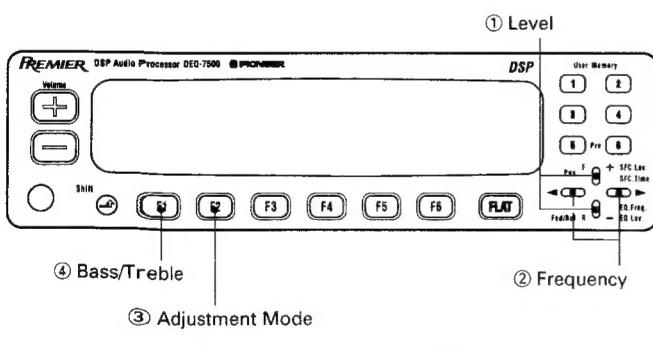
Select a button from buttons ① to ⑪. (When you press the same button again, the button's function will be cancelled.)

Sound Field Program Stored in the Unit's Memory

Button	Symbol	SFC Mode	Outline of the Sound Field
F1		STUDIO (STUDIO)	The sound image is positioned to the front without echo. A basic sound field is created by processing initial sounds resounding against the walls of a relatively small mixing room.
F2		JAZZ CLUB (JAZZ CLUB)	The image of the sounds were taken from the space of a jazz club able to accommodate an audience of 50 to 100. This is most effective for use with live recordings. It creates very realistic echoes and sounds resounding against the walls.
F3		CONCERT HALL (CONCERT HALL)	This creates the sounds of an exclusive classical music hall able to accommodate an audience of between 1,000 to 2,000. With resounded sounds at a speed of 200 m sec. and ample echo appropriately distributed to each speaker, you can enjoy expansive sounds and their depth.

Button	Symbol	SFC Mode	Outline of the Sound Field
F4		CATHEDRAL (CATHEDRAL)	This creates the kind of sound field found in a church, mainly with ample, resonant echoes. This is effective with classical music. The feature of this setting is the enveloping echoes.
F5		STADIUM (STADIUM)	The image of the sounds were taken from a live performance at an outdoor stadium. Echoes are created by sounds resounding against distant walls. That effect creates a sound field that gives you the feel of the expansive space of a stadium.

6. ADJUSTING BASS AND TREBLE



Features of Bass and Treble Adjustment

- Changing to the tone adjustment mode allows you to adjust bass and treble of the front and rear speakers either separately or at the same time.
- You can set the desired frequency to serve as the basis of bass and treble adjustment can be set.
- The unit can be set to memorize different bass and treble settings.

Selecting the Tone Adjustment Mode

Your unit allows you to select two tone adjustment modes. Select the mode of your choice before adjusting the bass or treble.

Separate Adjustment Mode

In this mode, the tone of the front and rear speakers is adjusted separately.

Combined Adjustment Mode

In this mode, the tone of both front and rear speakers is adjusted at the same time.

- ① Place the unit into bass and treble mode.

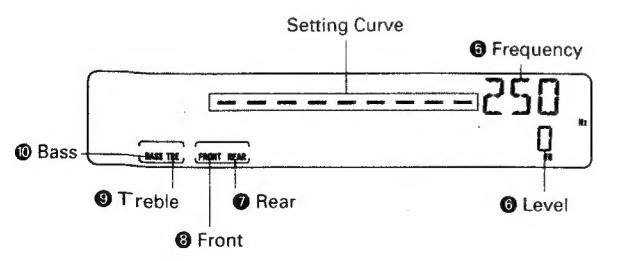
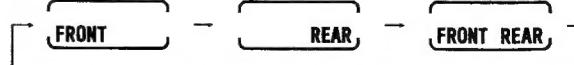
[See "Selecting the Volume-tone Control Mode" on page 3.]

- ② Each press of button ③, will switch the adjust mode as follows:

Separate Adjustment Mode; Front Speakers

Separate Adjustment Mode; Rear Speakers

Combined Adjustment Mode



Adjusting Bass and Treble

This function allows you to select the frequencies to serve as the basis for bass and treble adjustments.

Using the Separate Adjustment Mode

In this mode, the tone of the front and rear speakers is adjusted separately. [See the previous section, "Selecting the Tone Adjustment Mode" for an explanation of the separate adjustment mode.]

1 Place the unit into Bass and Treble Setting Mode.

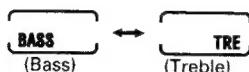
[See "Selecting the Volume-tone Control Mode" on page 3.]

2 Press the button ③ to select the set speakers whose tone is to be adjusted (front or rear).

[See the previous section, "Selecting the Tone Adjustment Mode" for an explanation of the separate adjustment mode.]

3 Press the button ④ to select bass or treble.

Each press of the button will switch it as follows:



4 Make the desired adjustment.

Adjust frequencies and bass and treble levels.

• Frequency

Pressing the left side of button ② will lower the frequency, while pressing the right side will raise the frequency. The following frequencies can be specified for of bass and treble adjustment:

Bass : 63 Hz → 100 Hz → 160 Hz → 250 Hz

Treble: 4 kHz → 6.3 kHz → 10 kHz → 16 kHz

• Level

Pressing the upper side of button ① will increase the level, while pressing the lower side will decrease the level.

-10dB → -8dB → → -2dB → 0dB → +2dB → → +8dB → +10dB

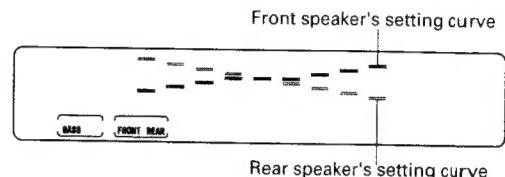
5 Repeat steps **2** to **4** to adjust the bass or treble of the other set of speakers.

Note:

When bass/treble are switched to combined adjustment mode after they are adjusted in their own mode separately, and when bass/treble in the front and rear output are switched to combined adjustment mode after they are adjusted in their own mode separately, front and rear settings done separately in their own mode will remain, and the bass/treble curves will be adjusted at the same time for those settings.

Points on the Use of the Combined Adjustment Mode After Adjusting the Tone in the Separate Adjustment Mode

- The set bass/treble curves are indicated simultaneously using a flashing bar (gray bar in the illustration below) for the rear setting and a illuminated bar (black bar in the illustration below) for the front setting.



- Adjusting bass/treble allows you to adjust frequencies and front and rear levels at the same time. However, when either the front or rear setting is at the maximum adjustment limit, further adjustment will not be possible.
- When front and rear bass/treble frequencies and levels are adjusted separately using their own modes, the frequency and level indicated on the display are the ones for front or for rear, depending on which was adjusted last.

7. EQUALIZER ADJUSTMENT

Using the Combined Adjustment Mode

In this mode, the tone of the front and rear speakers is adjusted at the same time. [See the previous section, "Selecting the Tone Adjustment Mode" for an explanation of the separate adjustment mode.]

1 Place the unit into Bass and Treble Setting Mode.

[See "Selecting the Volume-tone Control Mode" on page 3.]

2 Press the button ③ to select the combined adjustment mode.

[See the previous section, "Selecting the Tone Adjustment Mode" for an explanation of the separate adjustment mode.]

3 Press the button ④ to select bass or treble.

(Refer to step **3** in "Using the Separate Adjustment Mode.")

4 Make the desired adjustment.

(Refer to step **5** in "Using the Separate Adjustment Mode.")

Selecting the Equalizer Mode

Your unit provides the two equalizer modes described below. Select the desired equalizer mode before adjusting the equalizer.

Features of the Parametric Equalizer Mode

- Allows adjustment of any 4 frequencies (bands) in a range from 20 Hz to 20 kHz
- Allows the equalizer curve for the front and rear speakers to be adjusted separately.

Note:

When the parametric equalizer has been set, the spectrum analyzer mode display will indicate "P-EQ."

Features of the Graphic Equalizer Mode

- Allows level adjustments for frequencies of 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 3.5 kHz and 10 kHz.

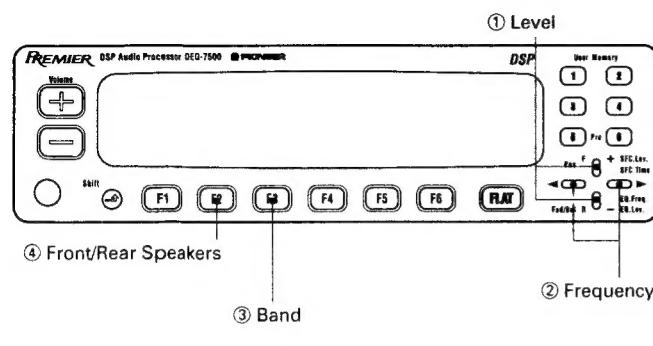
Note:

When the graphic equalizer has been set, the spectrum analyzer mode display will indicate "G-EQ."

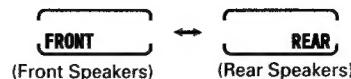
Cautions in adjusting the Equalizer:

The levels for parametric and graphic equalizer displays can not be set at the same time. For example, switching to graphic equalizer mode and setting the level after you have set the frequency and level on the parametric equalizer will result in all bands of the parametric equalizer becoming flat (0 dB). Refer to "Using the Tone Control Memory" on page 9 to set and store memory tone controls.

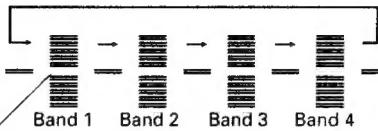
Using the Parametric Equalizer



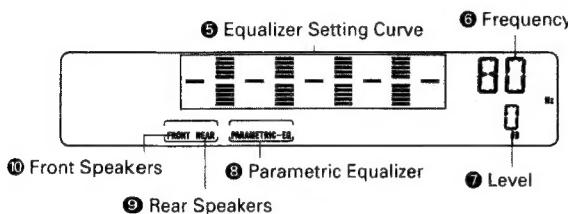
1 Place the unit into parametric equalizer mode.
 [See "Selecting the Volume-tone Control Mode" on page 3.]
2 Press the button ④ to select the set of speakers (front / rear).



3 Press the button ③ to select the band to be adjusted.



Reverse bar flash to indicate the setting for the bands being set.



4 Set the desired frequency.

Pressing the right side of button ⑥ increases frequency, while the left side decreases frequency.

Note:

- It is not possible to set frequencies with bands (band 1 to 4) overlapping each other.

5 Set the desired level

Pressing the upper side of button ⑦ increases the level, while the lower side decreases the level.

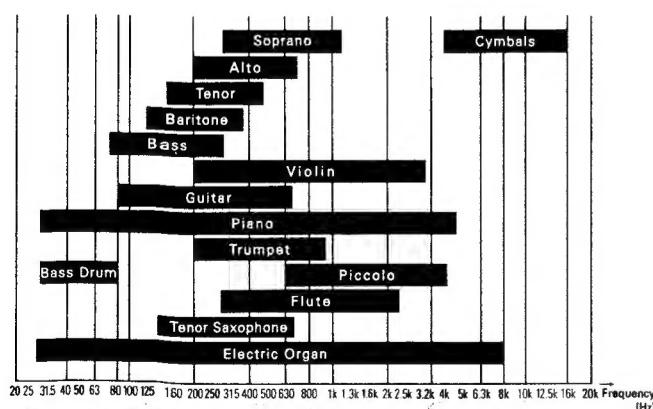
6 Adjust another band.

Repeat steps **3** to **5** for another band.

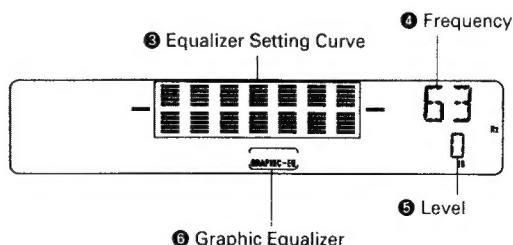
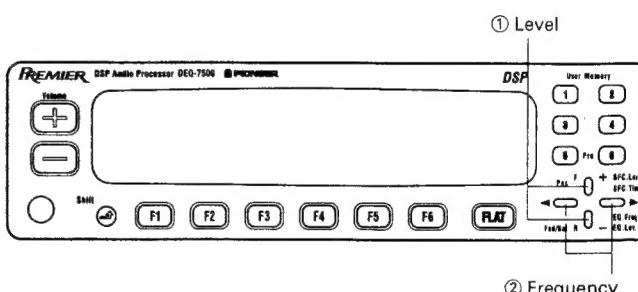
- Repeating steps **2** to **6** allows you to set the equalizer curve for the front and rear speakers separately.

In adjusting frequencies:

- Frequencies being set (of frequencies which are possible to set) and band correspond as shown below. Adjust them using the illustration as a reference.



Using the Graphic Equalizer



8. ADJUSTING THE SUB-WOOFER/CENTER

1 Place the unit into graphic equalizer mode.

[See "Selecting the Volume-tone Control Mode" on page 3.]

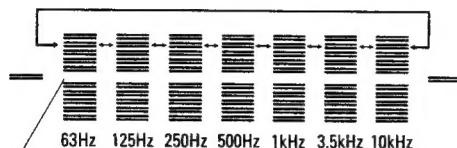
2 Set the desired frequency.

Pressing the right side of button ② increases frequency, while the left side decreases frequency.

3 Set the desired level

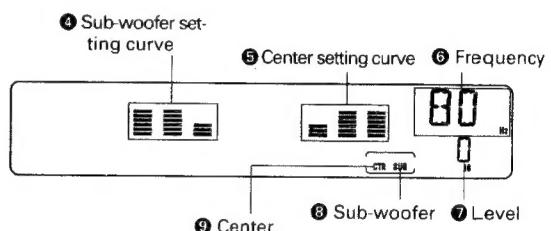
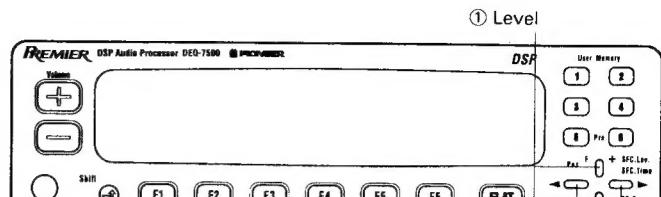
Pressing the upper side of button ① increases the level, while the lower side decreases the level.

4 Set another frequency.



Reverse bars will flash to indicate the setting for frequencies which are to be set.

Repeat steps ② and ③.



Adjust the frequency and level of the subwoofer and center output. The center speaker supplements missing sounds between left and right speakers. Enjoy the dynamic, heavy bass created by the subwoofer.

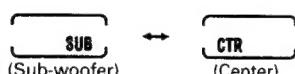
9. USING THE TONE CONTROL MEMORY

1 Place the unit into "Sub-woofer/Center Setting Mode".

[See "Selecting the Volume-tone Control Mode" on page 3.]

2 Press button ③ to select the output of Adjustment. (Sub-woofer/Center).

Each press of the button will switch it as follows:



3 Make the desired adjustment.

Adjust frequency and level of the subwoofer and center output.

• Frequency

Pressing the left side of button ② will increase the frequency, while pressing the right side will decrease the frequency. The following frequencies can be specified for sub-woofer and center adjustment:

Sub-woofer : 50 Hz → 80 Hz → 120 Hz

Center : 300 Hz → 2.5 kHz → 6.0 kHz

• Level

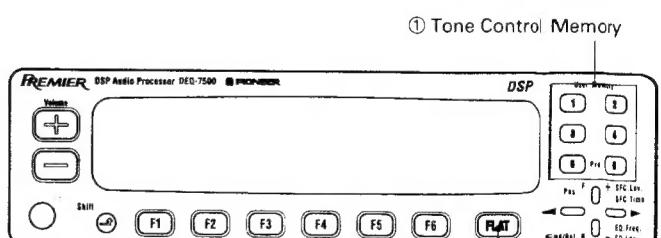
Pressing the upper side of button ① will raise the level, while pressing the lower side will reduce the level.

--- → -20dB → -10dB → -6dB → -4dB → -2dB →
(OFF)

→ 0dB → +2dB → +4dB → +6dB → +8dB → +10dB

Note:

- The sub-woofer/center output becomes a monaural output. The sub-woofer/center output is not changed by adjusting the balance of this set.



The memory buttons can be used to memorize the bass, treble, and equalizer settings of your choice.

Memory Protect Function

The unit incorporates memory protect function to prevent you or the memory you have set for your favorite tone controls from being mistakenly erased. Once this function has been set, memory buttons (5) and (6) will become unavailable for tone control memory operations. Set the function when needed.

Note:

- The details stored in the memory buttons will be erased and the tone control memory cancelled when the car battery is removed or the reset button has been pressed. This will happen even if the memory protect function has been set. In this case, reset the function.
- The memory protect function will not be operating when you use the unit for the first time.

1 Hold down button (2) for more than 2 seconds.

When you hold down the same button for more than 2 seconds, it becomes cancelled.

- Holding down the button for less than two seconds switches to the flat setting.

Note:

While you are setting the memory protect function, no indication will be on the display. Should you attempt to store memory in the memory buttons (5), (6), "PROT" (3) will flash on the display, indicating that the memory protect function is operating and memory is therefore unable to be stored.

Memorizing Tone Settings

Note:

Tone controls can be stored in memory while the unit is in the following three modes. Pressing a tone control memory button while the unit is in a mode other than the below three switches the unit to tone setting (refer to the next section).

"Bass and Treble Setting Mode"
"Parametric Equalizer Mode"
"Graphic equalizer Mode"

- 1 Adjust the bass and treble as desired.
[See "Adjusting Bass and Treble" on page 6.]
- 2 Adjust the equalizer.
[See "Equalizer Adjustment" on page 7.]
- 3 Memorize the setting.

Press and hold down one of the buttons in bank (1) for at least two seconds.

- Holding down the button for less than 2 seconds recalls the previously memorized tone or equalization settings. [See next section.]

Note:

Memory can not be stored in tone control memory buttons (5) and (6) when the memory protect function has been set. Should you wish to store memory, cancel the function by referring to "Memory Protect Function" in the previous section.

Recalling Memorized Tone Settings

The following procedure allows you to recall tone and equalizer settings that have been previously memorized to the memory buttons.

1 Recall the desired tone setting.

Once a tone setting is assigned to a button in bank (1), you just need to press that button to set it in. This also causes the number of the button pressed to appear at position (4) on the display.

- Holding down the button for more than 2 seconds activates the memorization function. [See previous section.]

10. CONNECTING THE UNITS

- Before Making final connections, make temporary connections then operate the unit to check for any connection cord problems.
- Refer to the owner's manual for details on connecting the various cords of the power amp and other units, then make connections correctly.
- Be sure to connect the memory power supply lead (orange) to a terminal that is always supplied with power regardless of the vehicle's ignition switch position.
- Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insulation and cause a very dangerous short.
- The separately sold digital fiber optic cable CD-D60 or a similar product must be used to connect the main unit with the multi-play CD player or CD player. To obtain the CD-D60, please contact your nearest PIONEER dealer.
- The Digital Fiber Optic Cable transmit light through its terminal structure and therefore should not be subjected to sharp bending or high pressure. If bending cannot be avoided, make sure the bend does not describe a circle with a radius of less than 25 mm. For details, refer to the precautions included with the Digital Fiber Optic Cable.

When using digital input

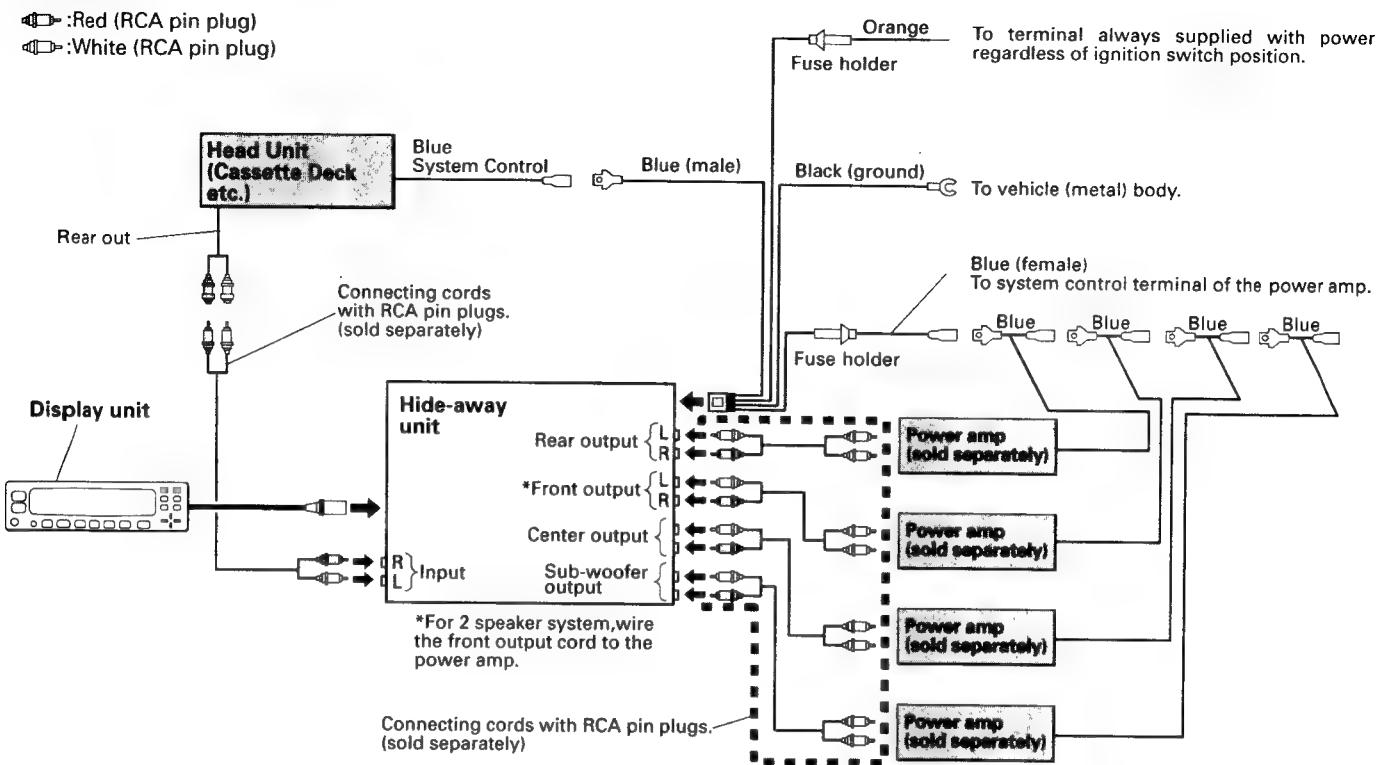
Even when using digital input, use analog input (RCA terminal) at the same time. Refer to example 2 of the connection diagram for wiring.

Upon Completion of Wiring

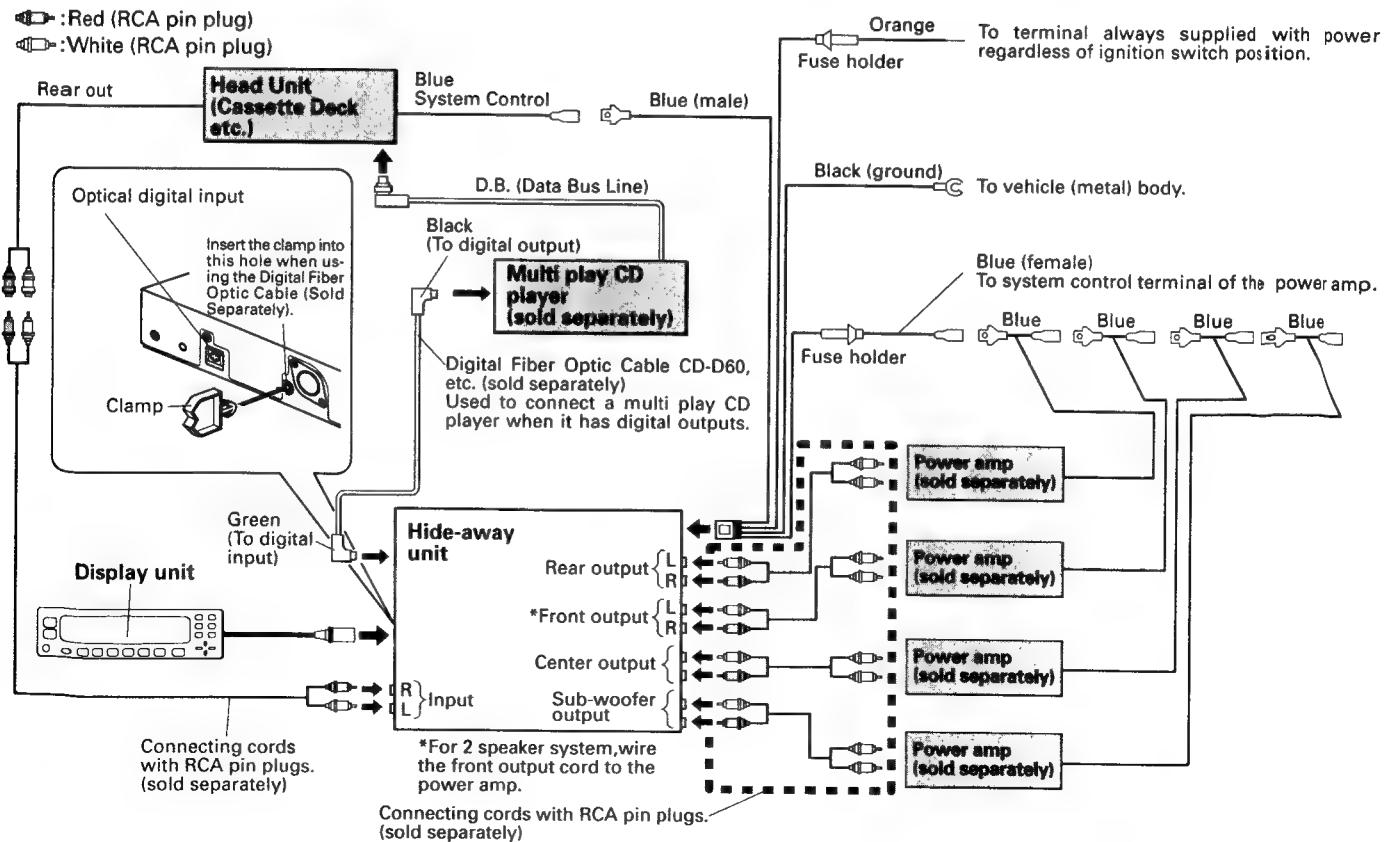
After wiring has been completed, use a sharp point such as a pencil tip to press the clear button on the Hide-away unit, main unit and the multi-play CD player.

Connection Diagram

Example 1:



Example 2:



11. SPECIFICATIONS

Power source	14.4V DC (10.8 — 15.6 V allowable)
Grounding system	Negative type
Dimensions (Display unit)	170 (W) x 46 (H) x 25 (D) mm [6-3/4 (W) x 1-3/4 (H) x 1 (D) in.](US)
(Hide-away unit)	203 (W) x 35 (H) x 178 (D) mm [8 (W) x 1-3/8 (H) x 7 (D) in.](US)
Weight	1.4 kg (3.1 lbs)(US)
Tone controls (parametric)	
(Bass) Frequency	63 Hz, 100 Hz, 160 Hz, 250 Hz
(Treble) Frequency	4 kHz, 6.3 kHz, 10 kHz, 16 kHz
Equalization range	± 10 dB
Equalizer	
(4 band parametric EQ)	
Frequency	20 Hz, 25 Hz, 31.5 Hz, 40 Hz 50 Hz, 63 Hz, 80 Hz, 100 Hz 125 Hz, 160 Hz, 200 Hz 250 Hz, 315 Hz, 400 Hz 500 Hz, 630 Hz, 800 Hz 1 kHz, 1.3 kHz, 1.6 kHz 2 kHz, 2.5 kHz, 3.2 kHz
4 kHz, 5 kHz, 6.3 kHz, 8 kHz 10 kHz, 12.5 kHz, 16 kHz, 20 kHz	
Equalization range	± 10 dB
(7 band EQ)	
Frequency	63 Hz, 125 Hz, 250 Hz, 500 Hz 1 kHz, 3.5 kHz, 10 kHz
Equalization range	± 10 dB
Sub-woofer output	
Frequency	50 Hz, 80 Hz, 120 Hz
Level	—∞ — +10 dB
Center output	
Frequency	300 Hz, 2.5 kHz, 6.0 kHz
Level	—∞ — +10 dB
Distortion	0.01 % (1 kHz, 250 mV, 20 kHz LPF)
Frequency response	20 — 20,000 Hz (0, -1dB)

Signal-to-noise ratio	
(Optical Input)	96 dB (IHF-A network)(US) 96 dB (IEC-A network)(ES)
(RCA Input)	90 dB (IHF-A network) 90 dB (IEC-A network)(EW,ES)
Input level/Impedance	500 mV/22 kΩ
Output level/Impedance	500 mV/1 kΩ

These specifications were determined and are presented in accordance with specification standards established by the Ad Hoc Committee of Car Stereo Manufacturers.

Note:

Specifications and the design are subject to possible modification without prior notice due to improvements.

12. DISASSEMBLY

● Removing the cover.

1. Remove the two screws.
2. Remove the cover.

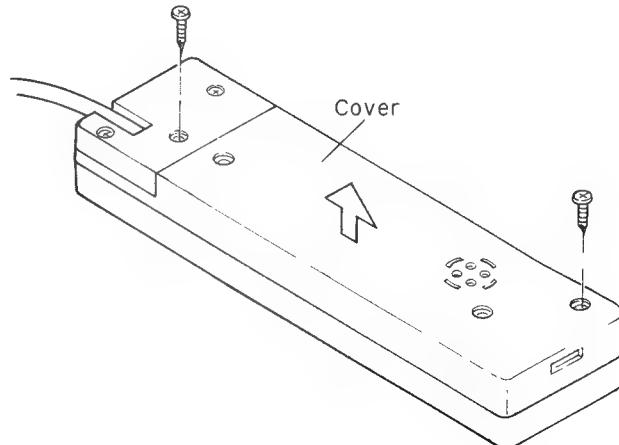


Fig. 1

● Removing the Display P.C. Board.

1. Disconnect the two connectors.
2. Remove the two screws.
3. Press the claws at two locations indicated by arrows and then raise the Display P.C. Board to remove.

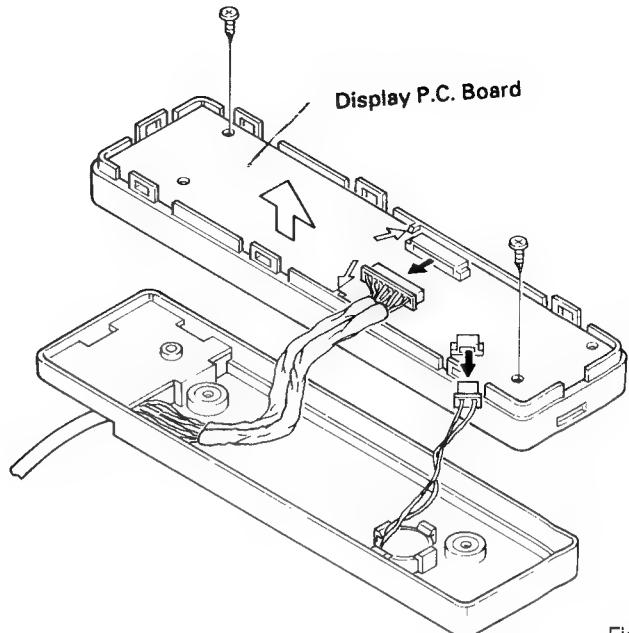


Fig. 2

● Removing the case.

1. Remove the four screws.
2. Remove the case.

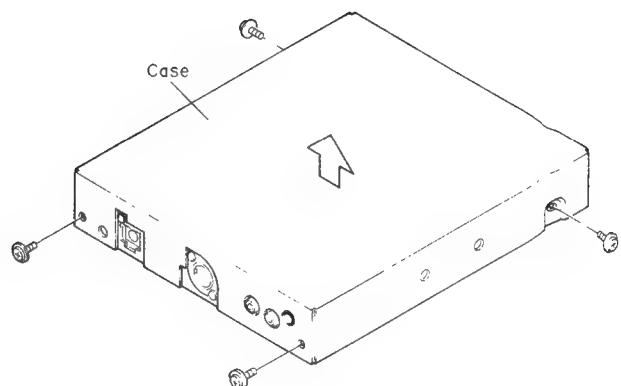


Fig. 3

● Removing the chassis.

1. Remove the five screws.
2. Unbend the claws at five locations indicated by arrows until straight.
3. Remove the chassis.

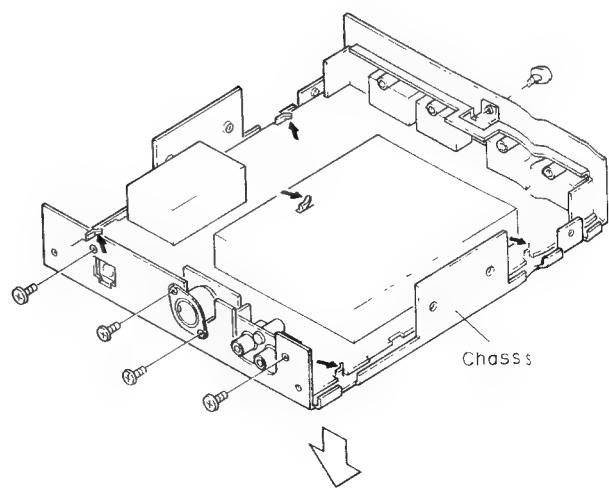


Fig. 4

• Removing the DSP Unit.

1. Remove the solders and unbend claws at four locations indicated by arrows.
2. Remove the plug.
3. Remove the two connectors.

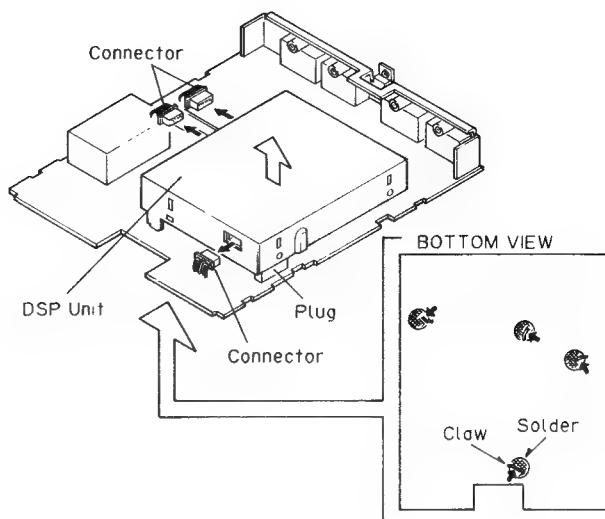


Fig. 5

• Removing the DSP P. C. Board. (1/2)

1. Insert tweezers to remove the case.

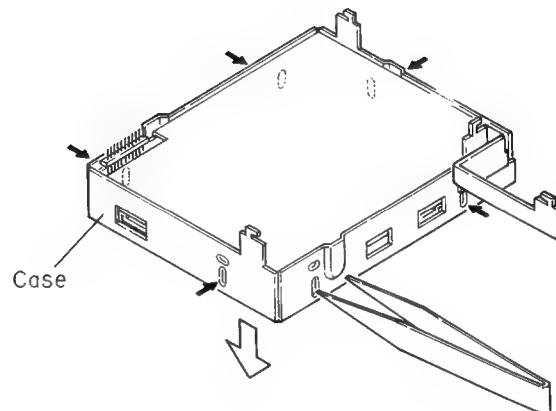


Fig. 6

• Removing the DSP P. C. Board. (2/2)

1. Remove the solder at a location indicated by arrow.
2. Unbend the claws at three locations until straight.
3. Remove the case.

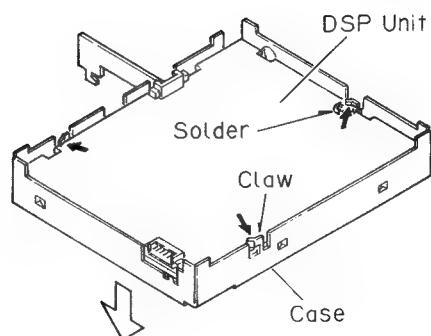
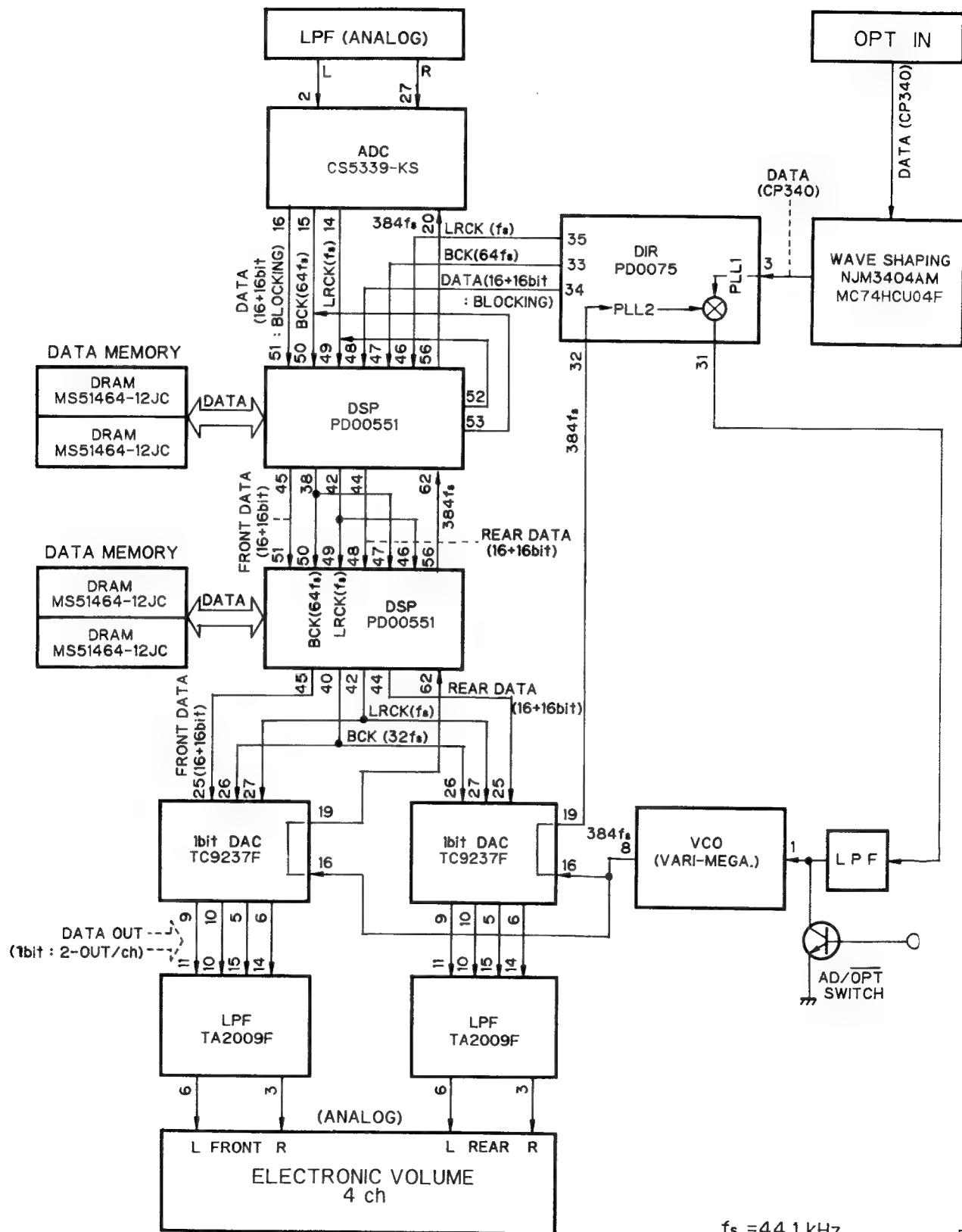


Fig. 7

13. CIRCUIT DESCRIPTION

- **Audio signal flow**



$f_s = 44.1 \text{ kHz}$

Fig. 8

13.1 Initializing the system

Setting all the input ports of the system microcomputer(PD4374C); BSENS (pin48), BTB (pin47) and DSENS (pin 46) at L brings SUBPW (pin39) to L, which allows Vdd to be supplied to the key microcomputer (PD4334B) via Q513.

Then, after the key microcomputer has been reset, an enable code is sent from REMOUT (pin5) to REMIN (pin49) of the system microcomputer to initialize the system.

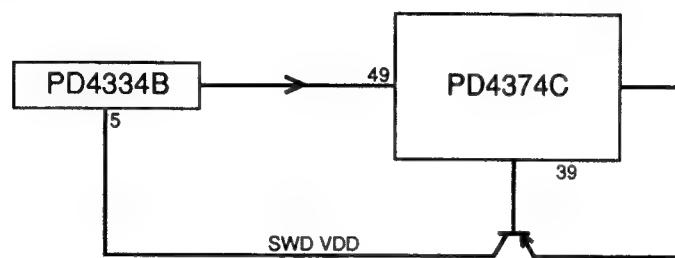


Fig.9

Note) If the key microcomputer does not transmit an enable code within 300 msec. after SUBPW has been set at L, the communication is regarded as being abnormal. In this case, put SUBPW in Hi state, reset the key microcomputer and repset the above procedure. If this procedure fails to be done five times, initializing can be accomplished only by inputting either BTB or DSENS and BSENS again.

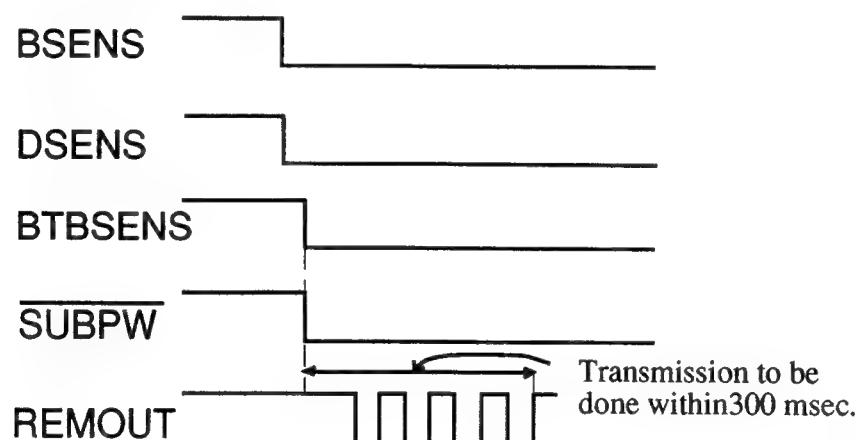


Fig.10

13.2 Audio signal flow

- 1) Analog signals are amplified about 14 dB by the flat amplifier and input through LPF to the AD converter for conversion into digital signals.
- 2) The data converted into 16-bit digital signals by the AD converter is input to pin 51 of IC806 for signal processing (GEQ, parametric).
- 3) The data for front assigned at pin 45 (AOUT1) of IC806 and the data for rear assigned at pin 44 (AOUT2) are input to the second chip IC807. After signal processing (position control, parametric, BASS, TRE) is carried out again, both the data are converted into analog signals through the LPFs of DA converters (IC811 and IC813) for the front data and rear data.
- 4) As for SFC, reverberation is produced by IC804 and IC805 and initial reflecting sounds are produced by IC801 and IC802.

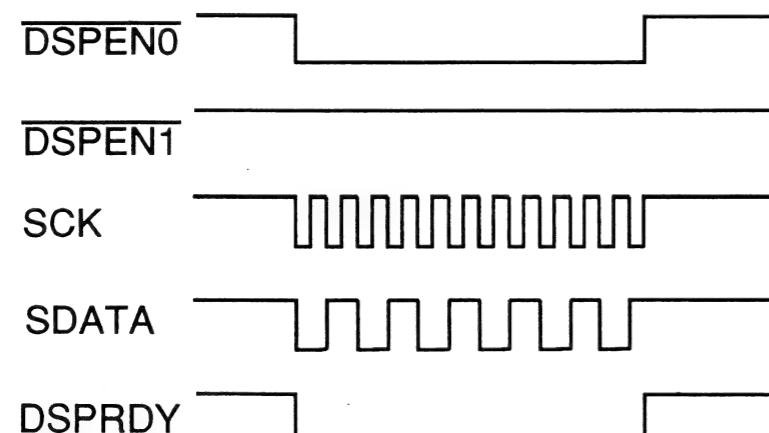
13.3 Communication between DSP and the system microcomputer

Communication between PD4374 and IC803 and IC806 (PD00551) is carried out by sending 8-bit data and by verifying a return of DSPRDY.

Two DSP chips commonly use SCK and SDATA, so that selection of a chip is made by DSPEN0 and DSPEN1 that specify a chip with which the system will communicate.

When DSPEN is placed in Hi stste, however, the sent data is ignored

For actual communication, if data is to be sent to IC806, set DSPOEN0) at L and DSPEN1 at Hi to select IC806 and send 8-bit data as one cycle using SCK and SDATA. When DSPRDY does not become Hi, the communication is regarded as being abnormal. In this case, reset the DSP by DSPRESET and retry communication.



(When data is sent to IC806)

Fig.1

13.4 OPT analog switching

- 1) When optical data input is incoming from a multiplexer channel, etc. via CN601 (optical input receptacle). the data is input to pin 3 of PD0075 (IC810) through the waveform shaping circuit. This brings ERR1, 44.1K of IC810 to L, which, in turn, brings ERR1 assigned at pin 19 of PD4374C to L.
- 2) When pin 19 of PD4374C becomes L, pin 67 of ADC/DIR is put in L state.
- 3) Setting ADC/DIR at L turns Q802 off. Then, IC810, IC808 and IC813 makes PLL, and VCO is locked to 3845S (16.934MHz). This brings ERR2 assigned at pin 39 of IC810 to L. which is input to pin 18 of PD4374C.
- 4) Setting pins 18 and 19 at L causes PD4374C to judge the input as optical data . Then , PD4374C calls a program out of the IC 552 to switch the input of DSP (IC806) to optical input. The input change is accomplished by sending the data to DSP.

Note) Cancel release of ERR1 and ERR2 is carried out at the fifth leading edge of the pulse which is input from CNTR, pin 9 of IC810 after the recovery from an error.

1 Waveform shaping circuit

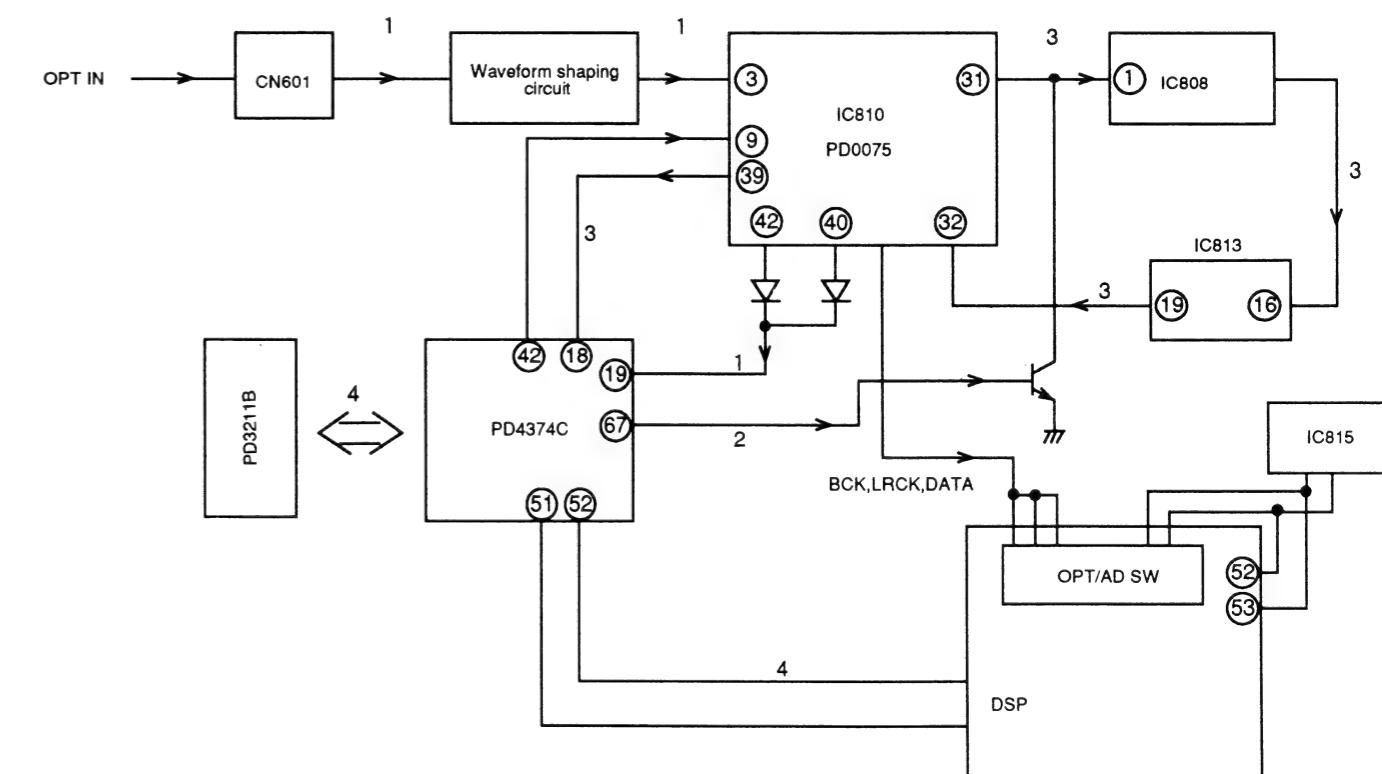
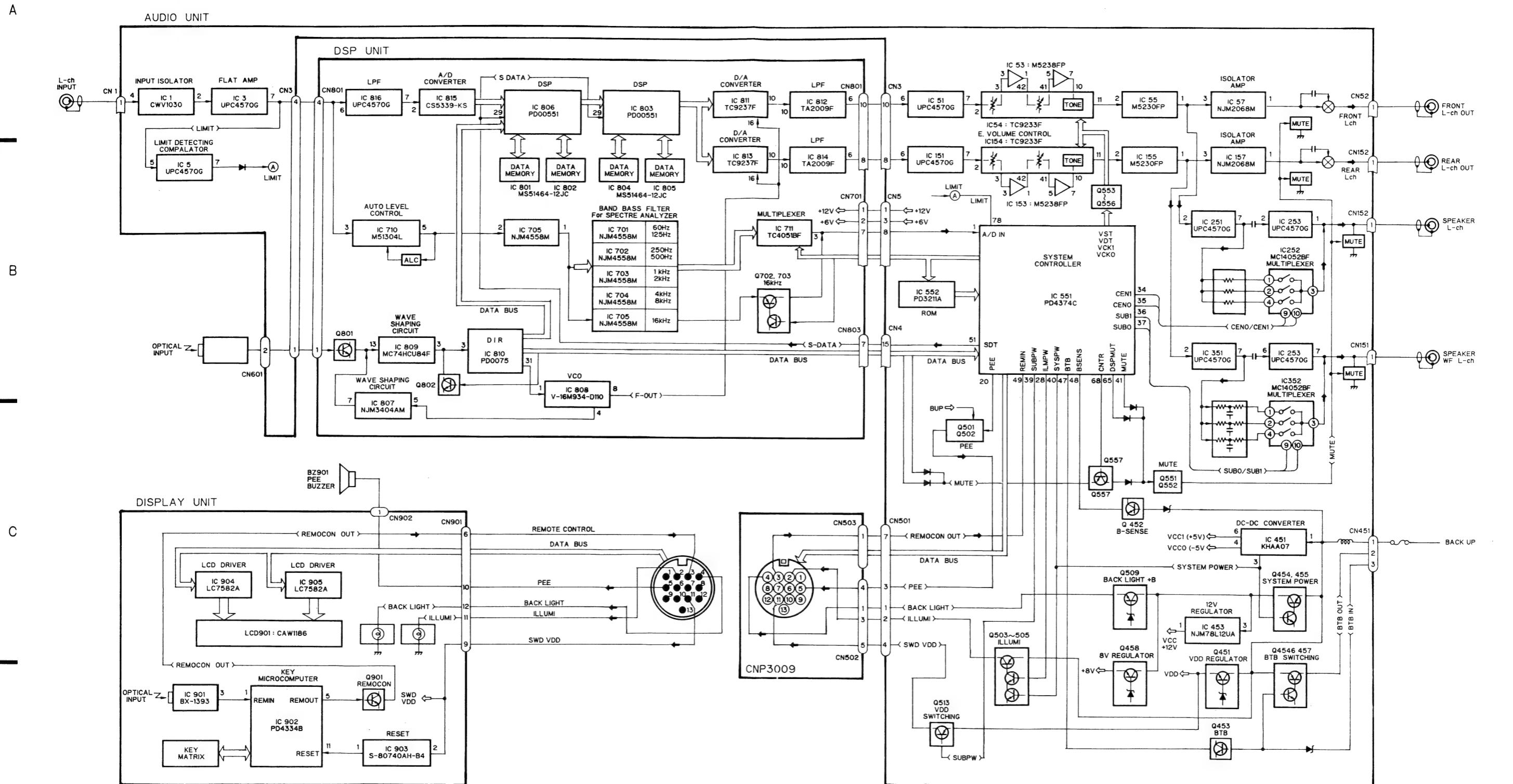


Fig. 12

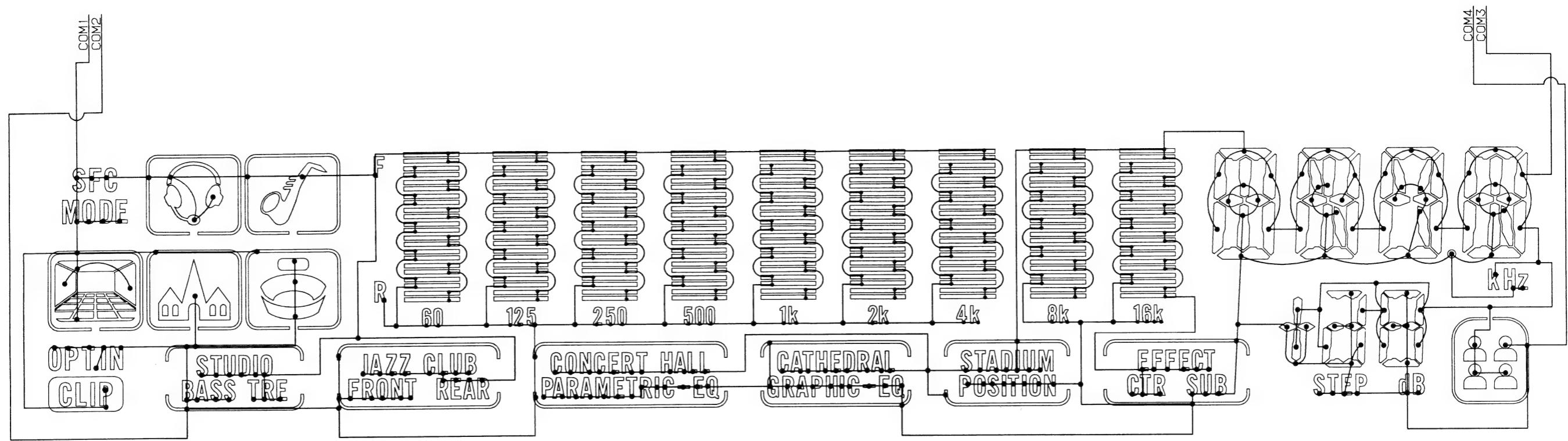
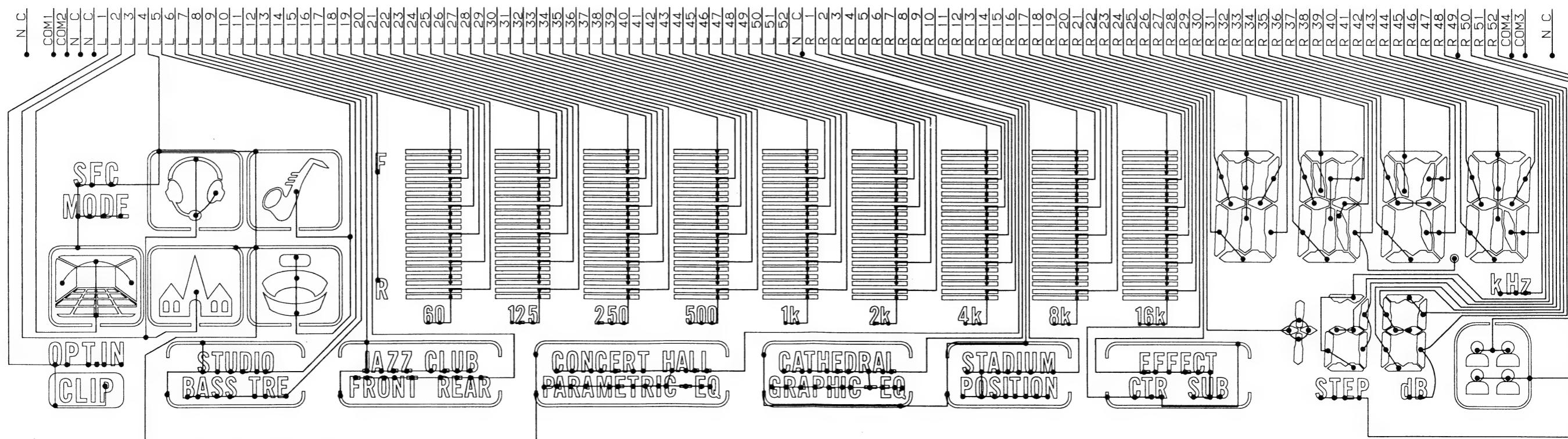
- **Block Diagram**



*REMOCON = REMOTE CONTROL

Fig. 13

• LCD (CAW1186)

COMMONSEGMENT

14. CONNECTION DIAGRAM(1)

- **Audio Unit**

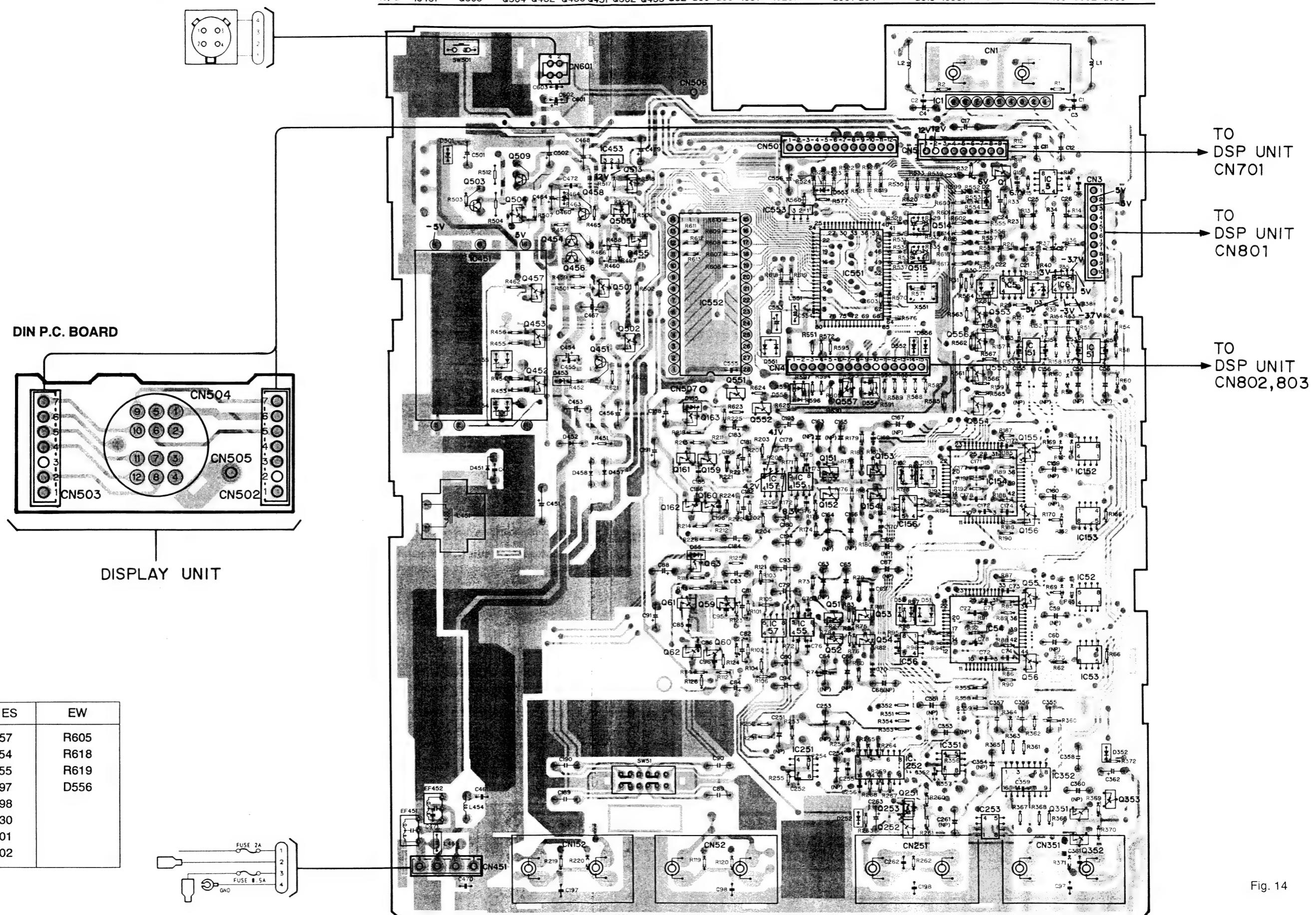
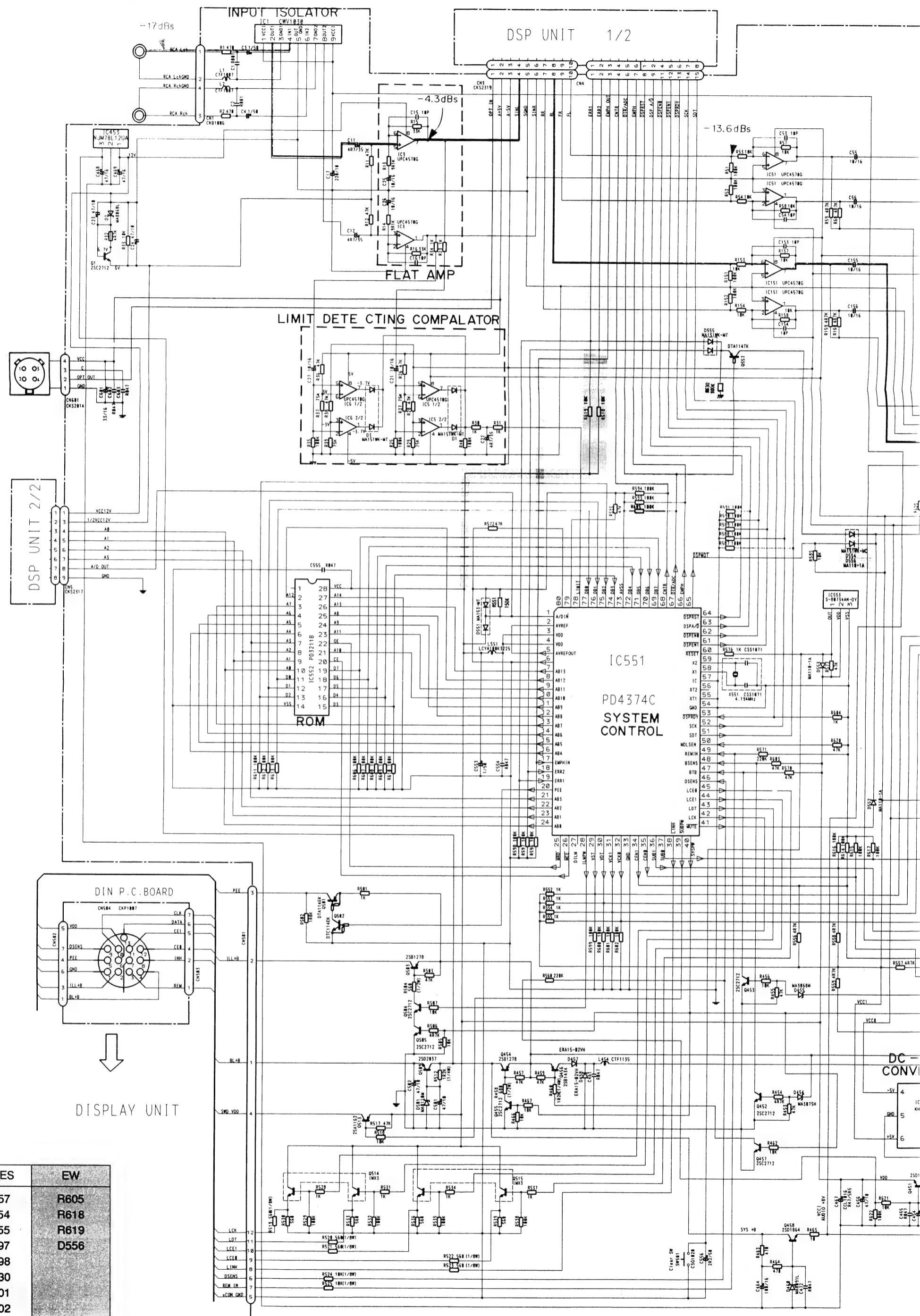


Fig. 14

15. SCHEMATIC CIRCUIT DIAGRAM(1)

• Audio Unit



AUDIO P. C. BOARD

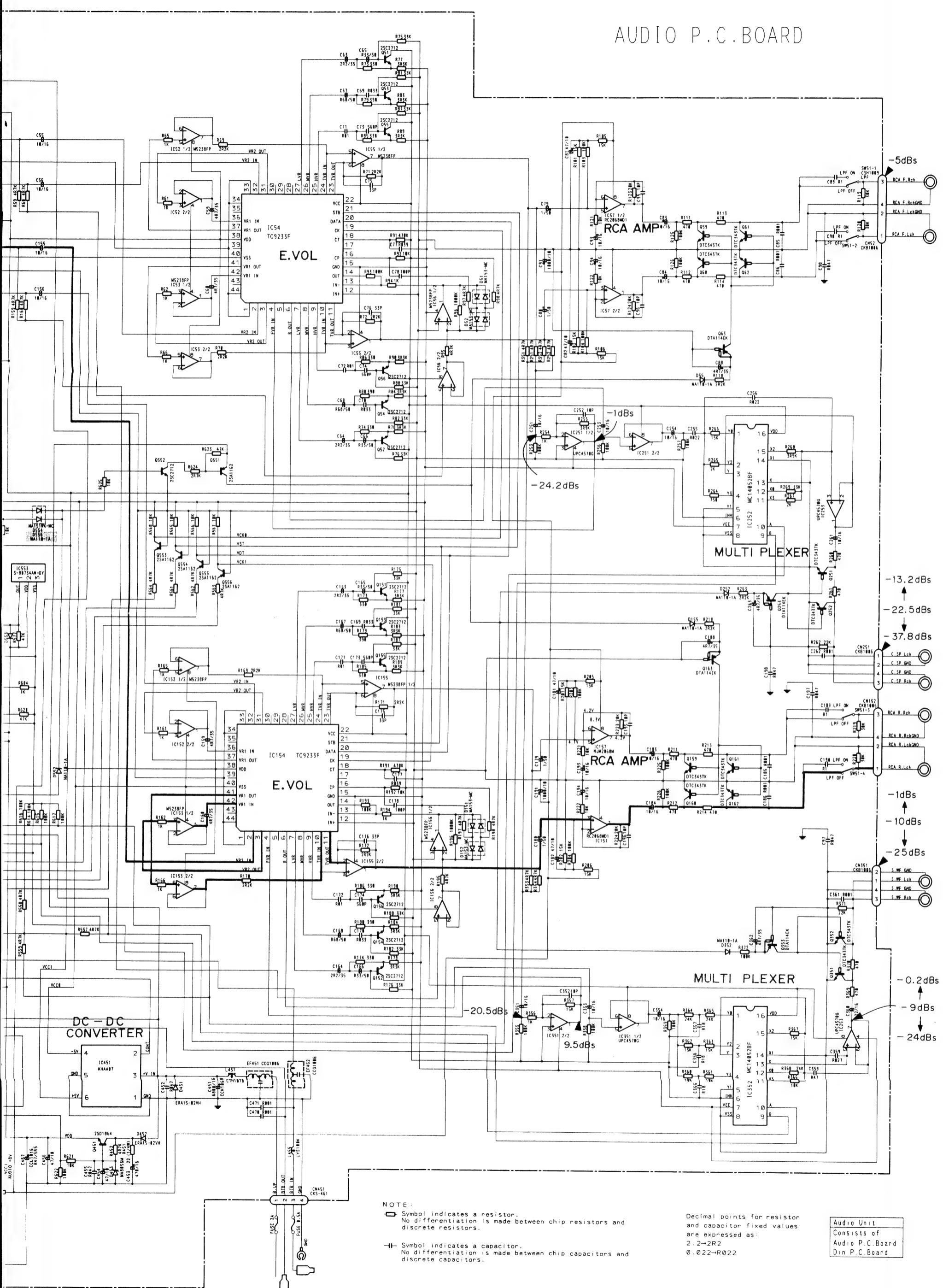
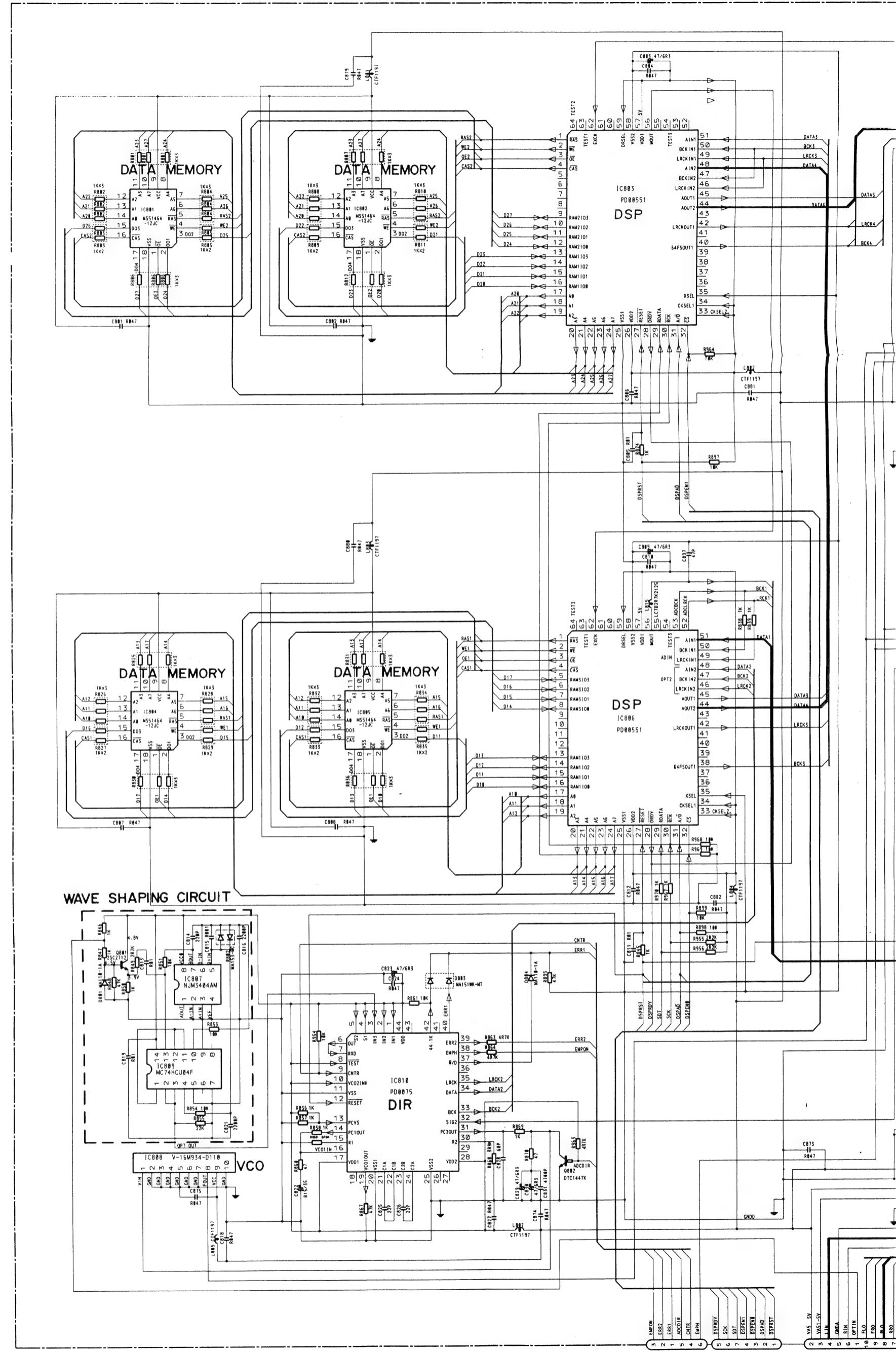


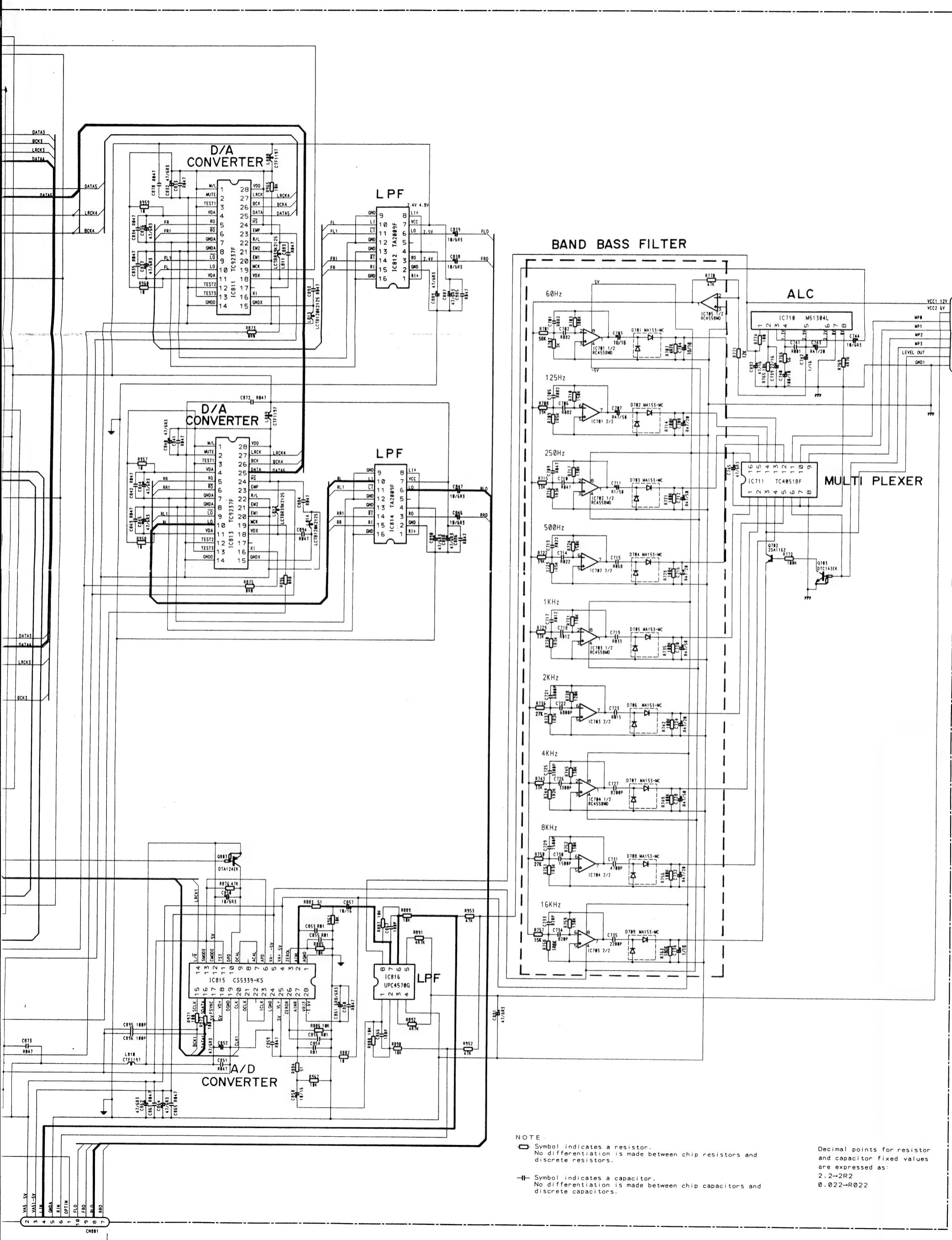
Fig. 15

16. SCHEMATIC CIRCUIT DIAGRAM(2)

- DSP Unit (DEQ-7500/US, DEQ-7550/ES)

DSP UNIT





TO AUDIO P.C.B.
BOARD

17. CONNECTION DIAGRAM(2)

- **DSP Unit (DEQ-7500/US, DEQ-7550/ES)**

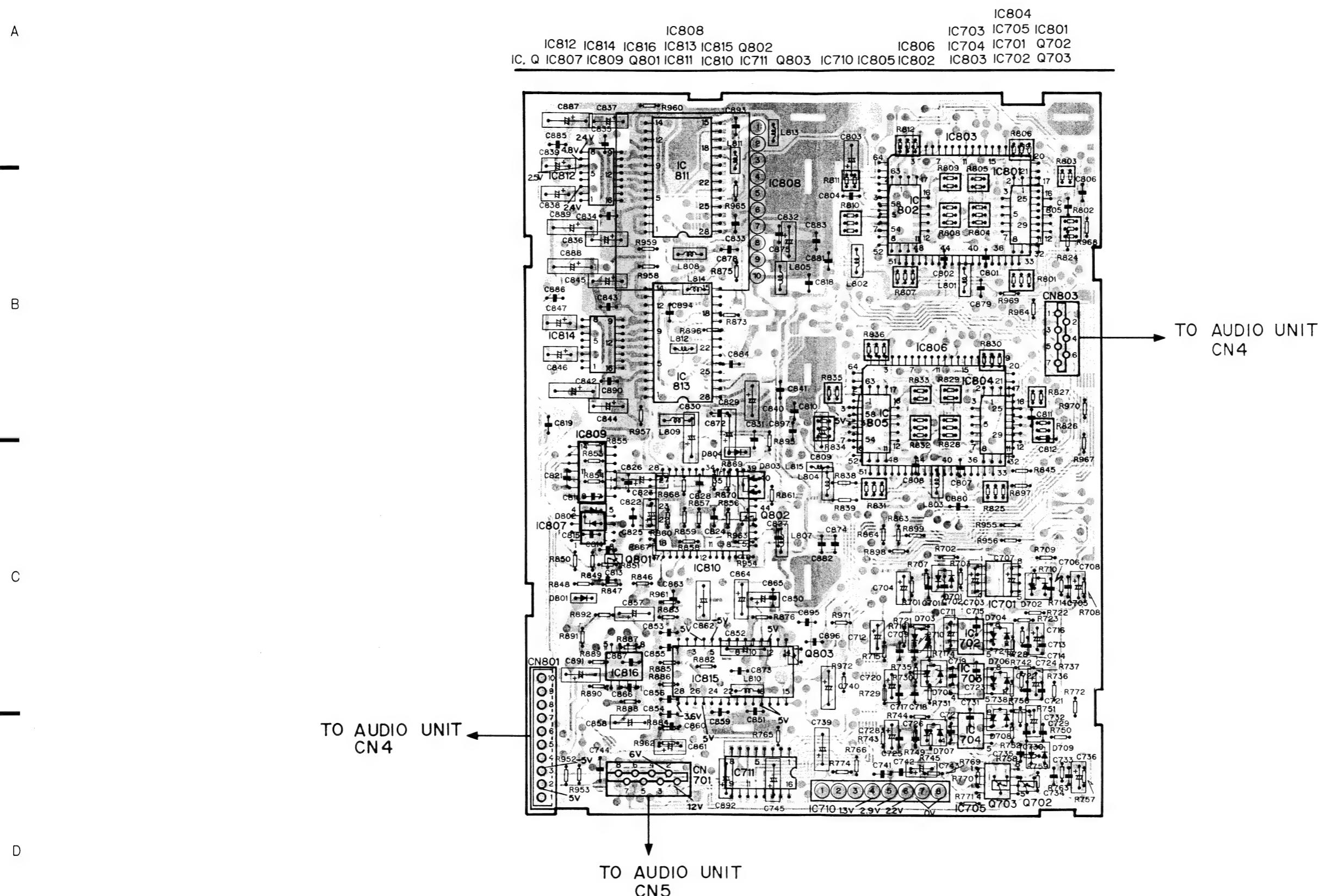


Fig. 17

18. CONNECTION DIAGRAM(3)

- DSP Unit (DEQ-7500/EW)

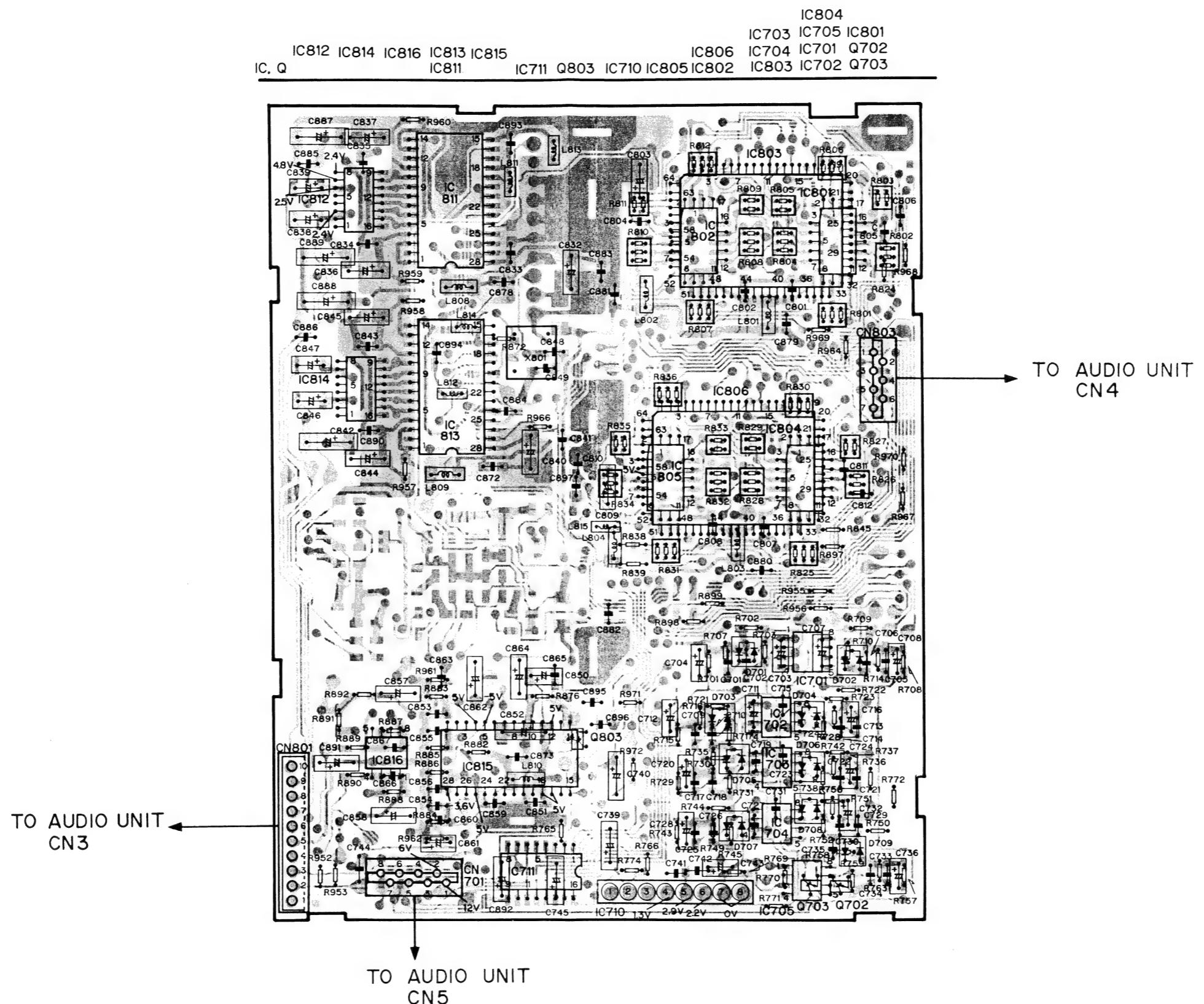
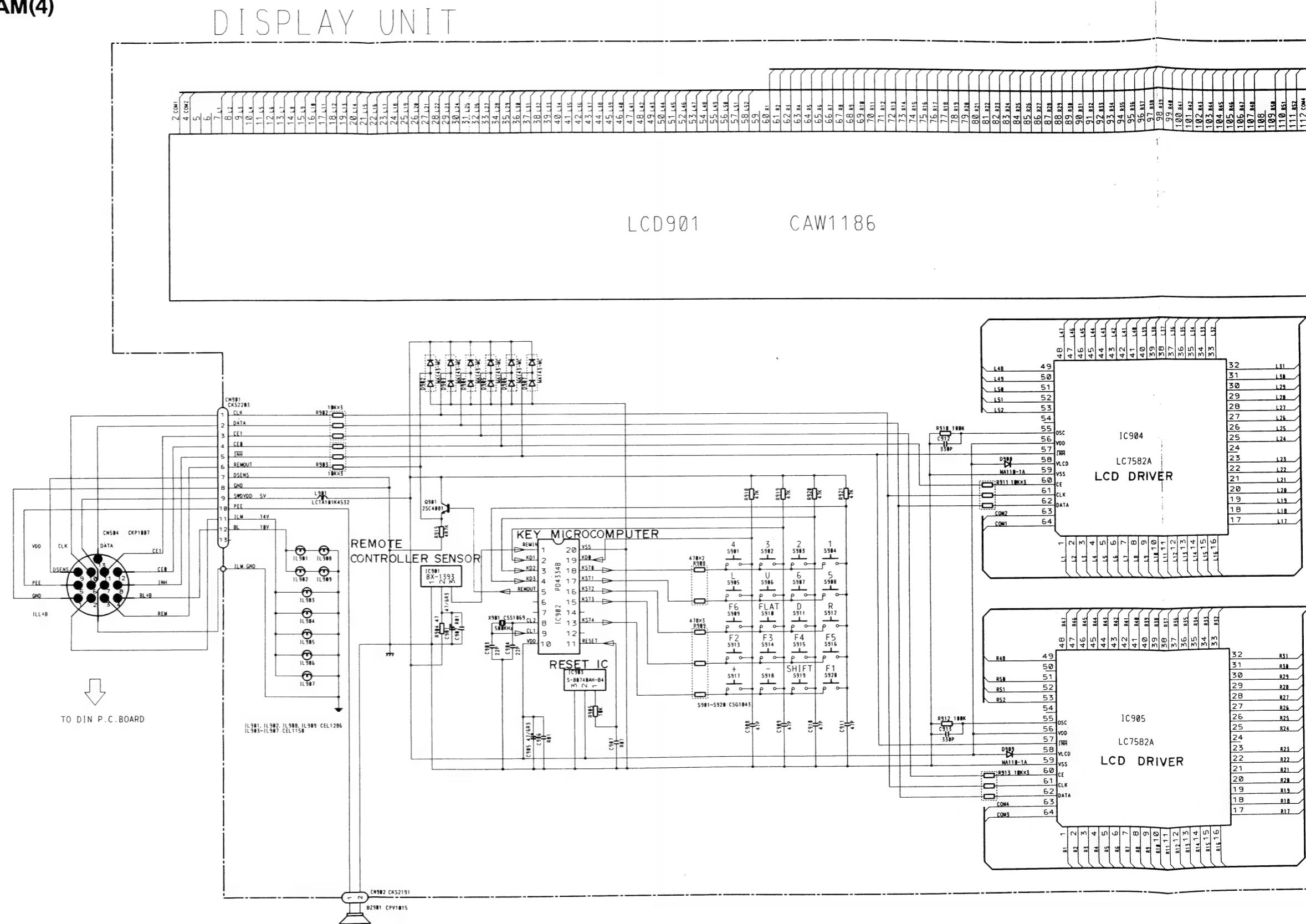


Fig. 18

20. SCHEMATIC CIRCUIT DIAGRAM(4)

• Display Unit



NOTE:

— Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

— Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2 → 2R2

0.022 → R022

UNIT

4

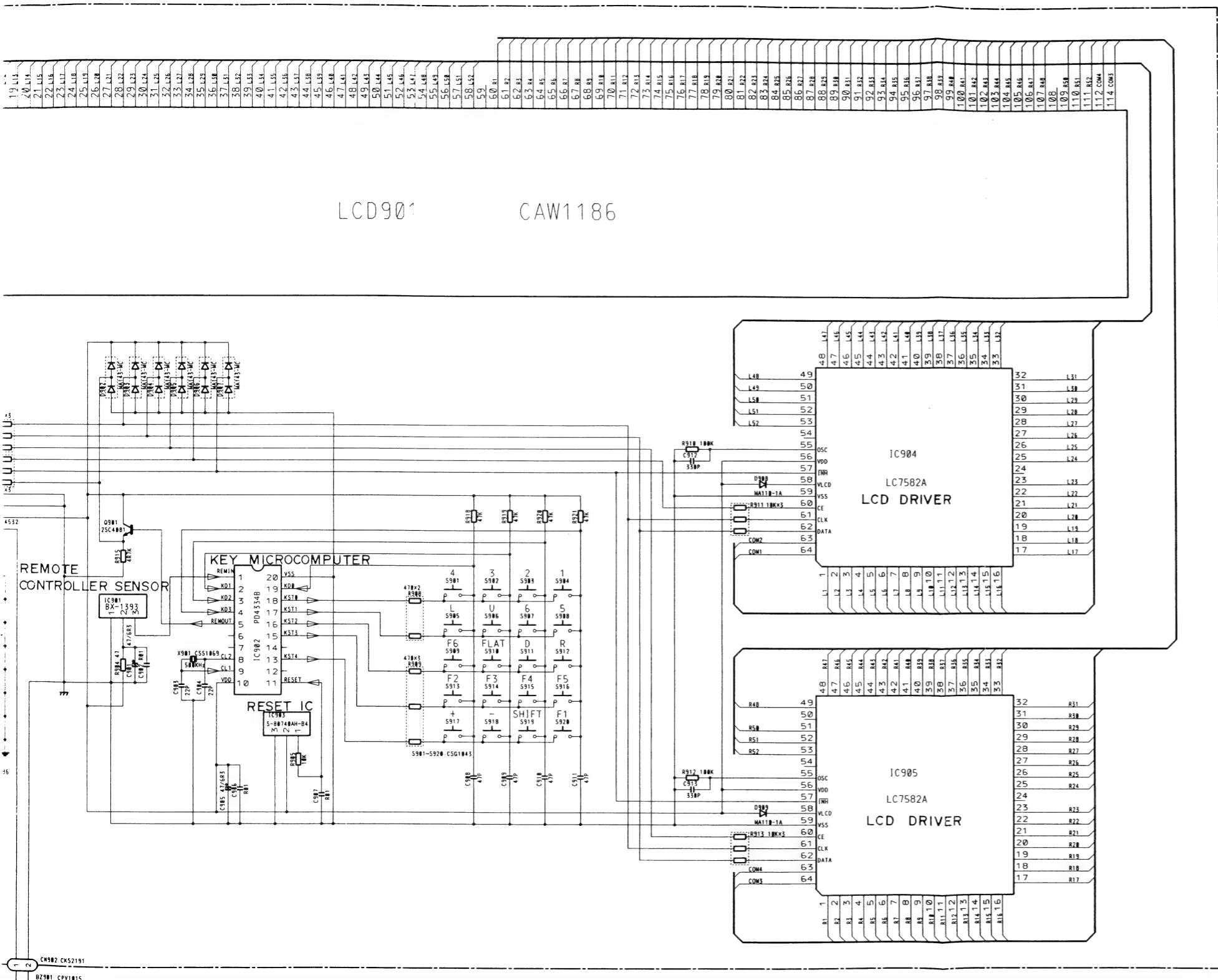
5

6

7

8

9



NOTE

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as
2.2→R22
0.022→R022

A

B

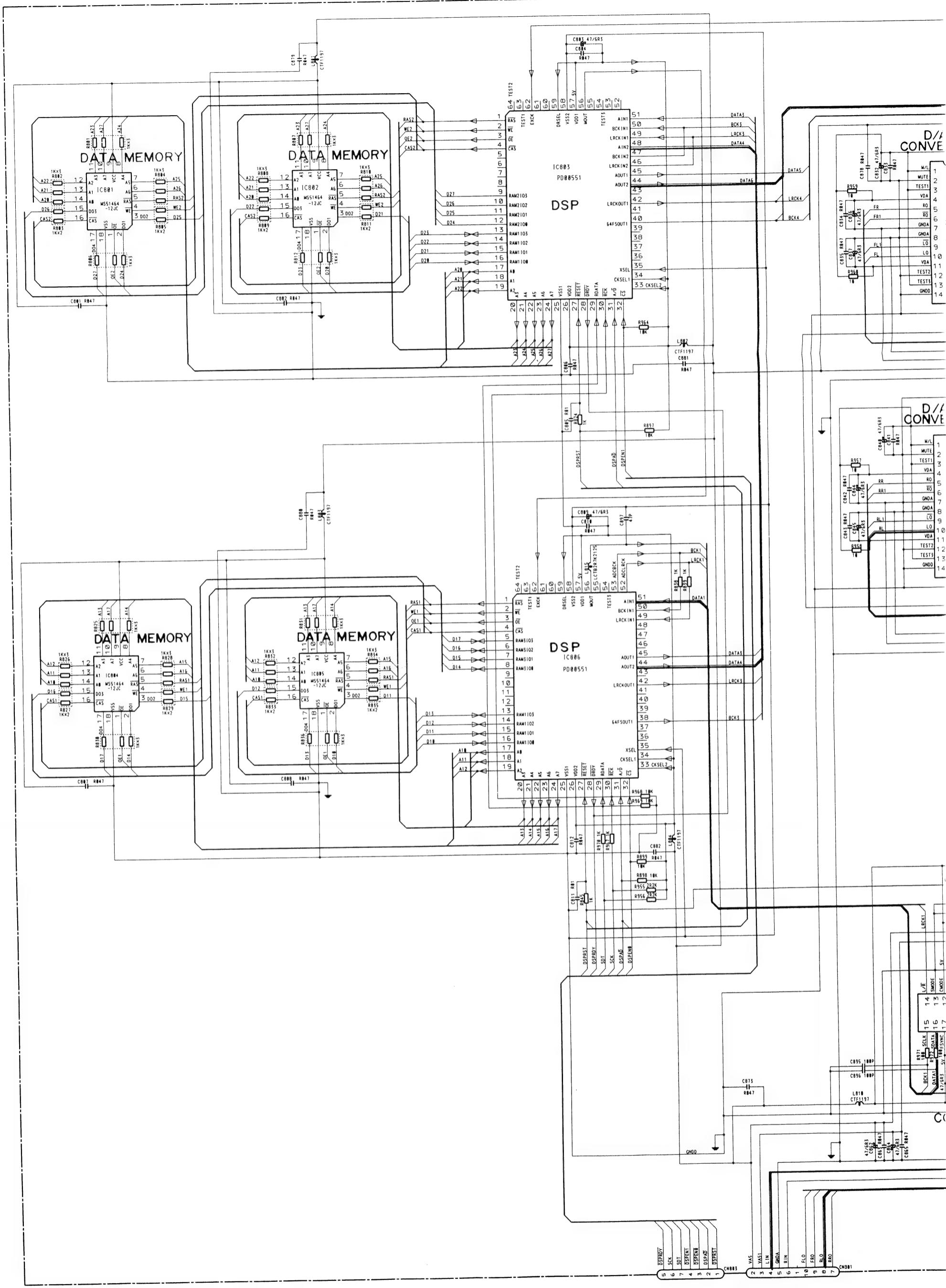
C

D

Fig. 20

SCHEMATIC CIRCUIT DIAGRAM(3)

DSP Unit (DEQ-7500/EW)



DSP UNIT

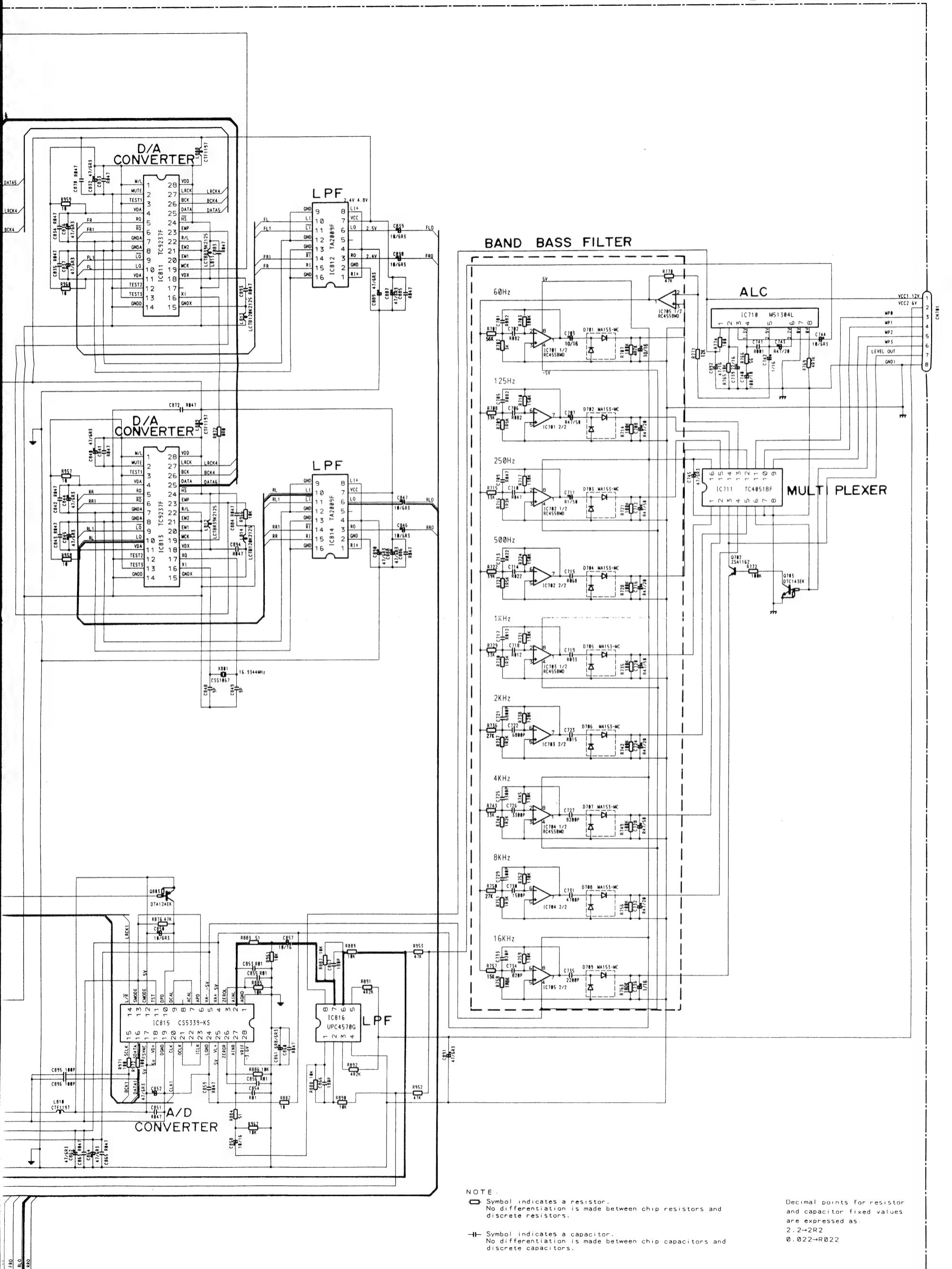


Fig. 19

21. CONNECTION DIAGRAM(4)

- Display Unit

A

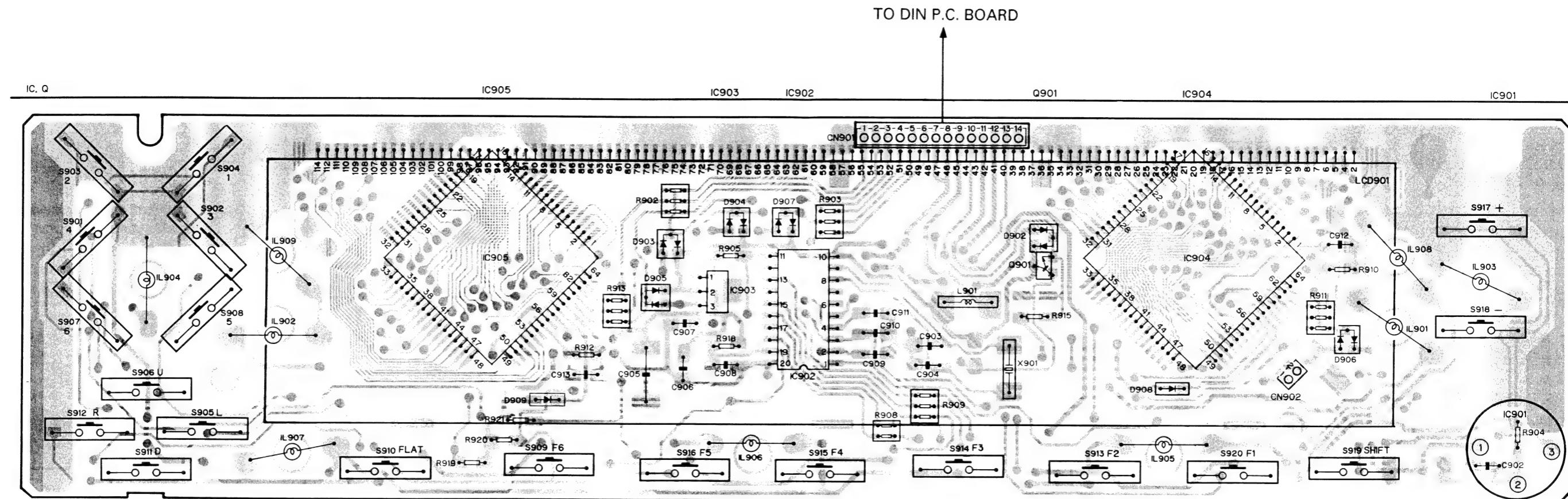
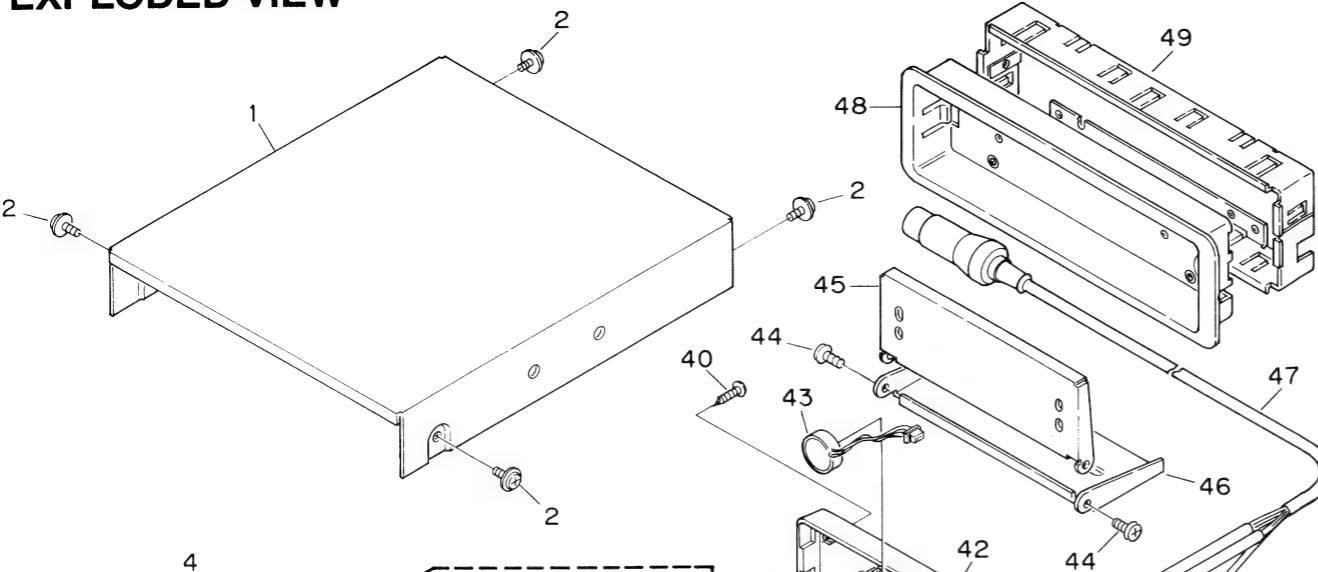


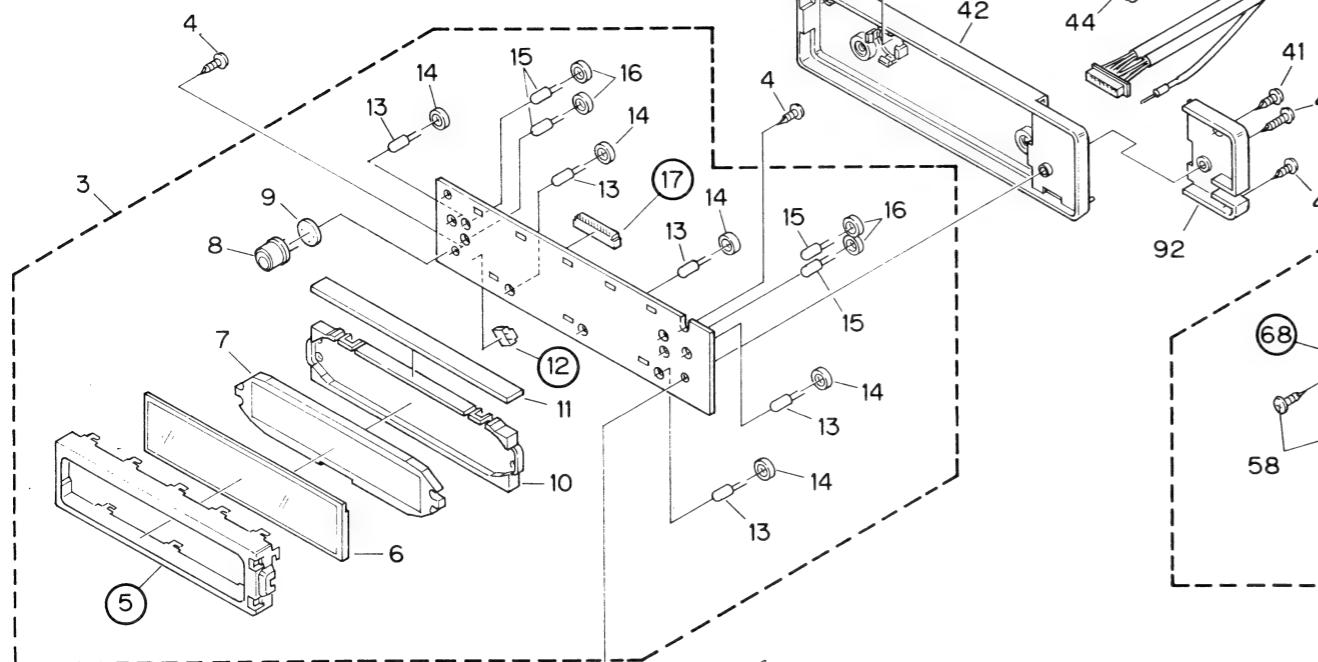
Fig. 21

22. EXPLODED VIEW

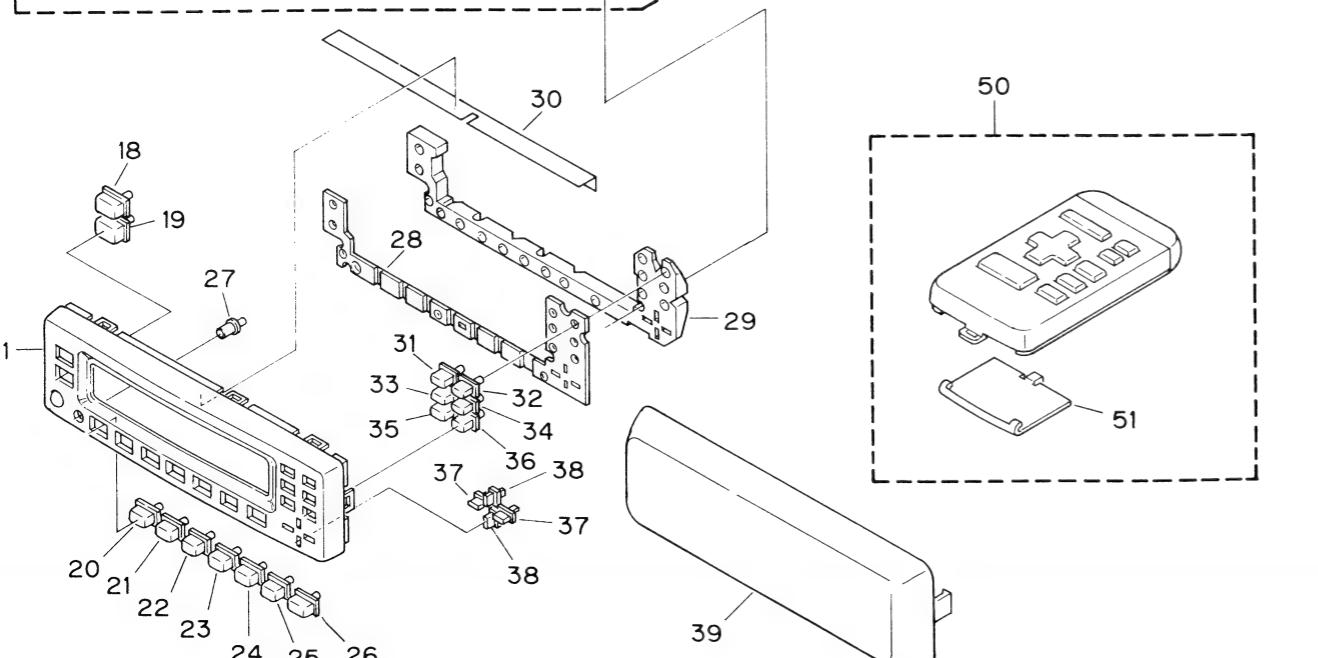
A



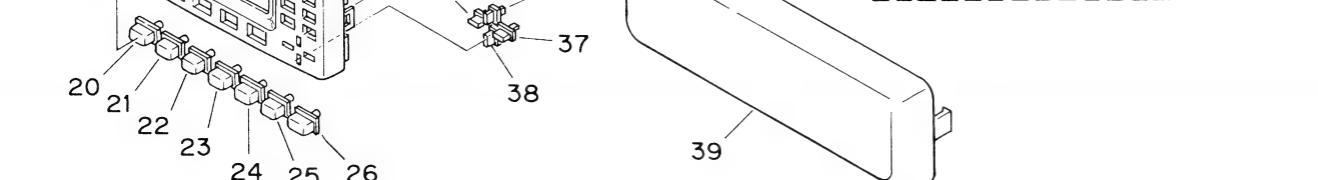
B



C



D



2

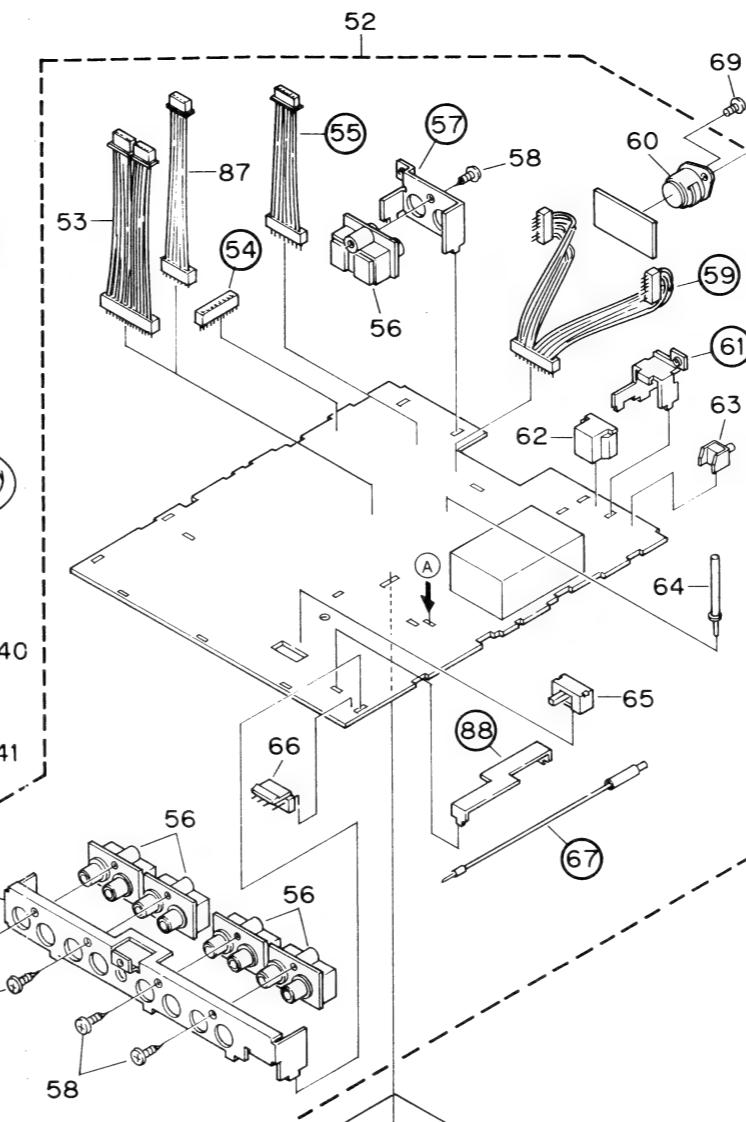
3

4

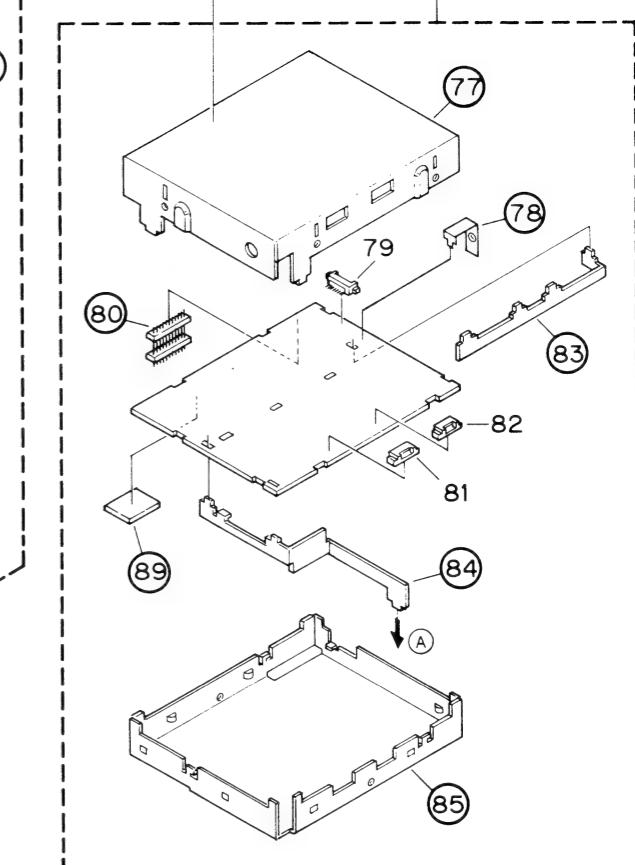
5

6

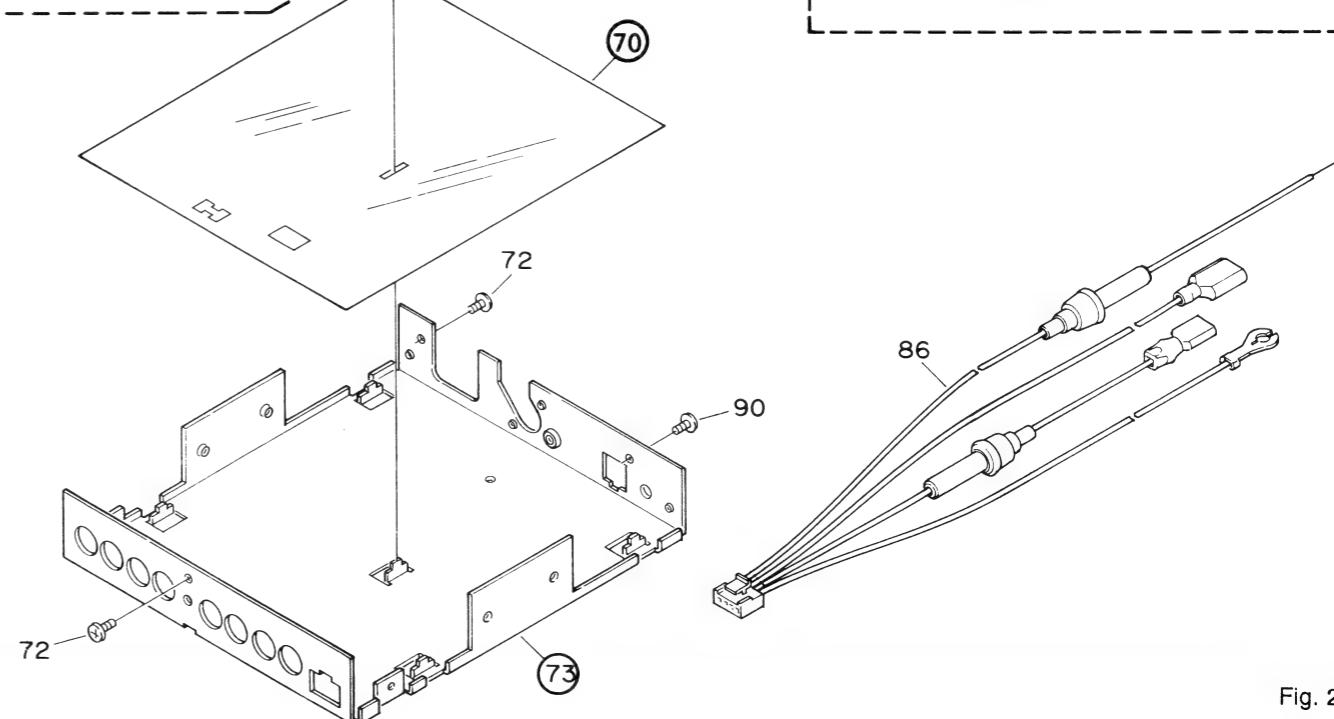
A



B



C



D

Fig. 22

• Parts List

NOTE:

- The parts marked with “◎” may need long time to supply and their supply is subject to refuse as the case may be.
- Because the parts with encircled number shown on the dismantling drawing are not spare parts, we are unable to supply them in principle.

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Case(US)	CNB1627	50	Remote Control Assy (US)	CXA4874
	Case(EW)	CNB1584		Remote Control Assy (EW, ES)	CXA4690
	Case(ES)	CNB1582			
◎ 2	Screw	PMS30P050FZK	◎ 51	Battery Cover	CNS2432
◎ 3	Display Unit	CWS1236	◎ 52	Audio Assy(US, ES)	CWM3143
4	Screw	BPZ20P060FMC		Audio Assy(EW)	CWM3141
5	Holder	CNC4130			
6	LCD	CAW1186	53	Cord(US, ES)	CDE367380FZK
7	Lens	CNV3047	54	Connector	CKS2319
8	IC(IC901)	BX-1393	55	Cord	CDE3685
9	Spacer	CNV3064	56	Pin Jack	CKB1006
10	Housing	CNV3048	57	Holder	CNC4139
11	Connector	CNV3049	58	Screw	PPZ30P080FZK
12	Connector	CKS2191	59	Cord	CDE3672
13	Lamp	CEL1150	60	Socket	CKP1007
14	Bush	CNV-724	61	Holder(US, ES)	CNC3316
15	Lamp	CEL1286	62	Connector(US, ES)	CKS2014
16	Bush	CNV2571	63	Switch	CSG1020
17	Connector	CKS2203	64	Clamper	CEP100540FZK
18	Button(+)	CAC2367	65	Switch	CSH1009
19	Button(-)	CAC2368	66	Plug	CKS-461
20	Button(F1)	CAC2371	67	Cord(EW)	CDE377550FZK
21	Button(F2)	CAC2372	68	Holder	CNC4138
22	Button(F3)	CAC2373	69	Screw	BMZ26P040FZK
23	Button(F4)	CAC2374	70	Insulator	CNN3273
24	Button(F5)	CAC3183	71	
25	Button(F6)	CAC3184	72	Screw	BMZ30P050FZK
26	Button(FLAT)	CAC3185	73	Chassis	CNA1433
27	Button	CAC3178	74	Spacer	CNM1429
28	Cushion	CNM3269	75	Plate	CNC4425
29	Lens	CNV3050	◎ 76	DSP Unit(US, ES)	CWE1269
30	Spacer	CNM3457		DSP Unit(EW)	CWE1268
31	Button(1)	CAC3186	77	Shield	CNC4430
32	Button(2)	CAC3187	78	Plate	CNC4426
33	Button(3)	CAC3188	79	Connector	CKS2197
34	Button(4)	CAC3189	80	Plug	CKS2816
35	Button(5)	CAC3190	81	Connector	CKS2196
36	Button(6)	CAC3191	82	Connector	CKS2195
37	Button	CAC2379	83	Holder	CNC4143
38	Button	CAC2380	84	Holder	CNC4142
39	Panel(EW)	CNS2464	85	Shield	CNC4431
40	Screw	CBA1211	86	Cord Assy(US, ES)	CDE3748
41	Screw	BPZ20P050FZK		Cord Assy(EW)	CDE3749
42	Cover	CNS2390	87	Cord(EW)	CDE3684
43	Buzzer	CPV1015	88	Holder	CNC4144
44	Screw	BMZ40P060FZK	89	Cushion	CNM3171
45	Bracket	CNC4290	90	Screw(US, ES)	BMZ30P050FZK
46	Bracket	CNC4291	91	Grille Unit(US)	CXA4827
47	Cord Assy	CDE3686		Grille Unit(EW)	CXA4836

23. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose part numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

Chip Resistor

RS1/□S□□□J. RS1/□□S□□□J

Chip Capacitor (except for CQS....)

CKS..... CCS..... CSZS.....

Unit Number :
Unit Name : DSP Unit(DEQ-7500/UC,DEQ-7550/ES)

MISCELLANEOUS

Circuit Symbol & No. Part				Name	Part No.				
IC 701	702	703	704	705	RC4558MD	R 763		RS1/10S184J	
IC 710					M51304L	R 765		RS1/10S103J	
IC 711					TC4051BF	R 766		RS1/10S560J	
IC 801	802	804	805		MS51464-12JC	R 769		RS1/10S472J	
IC 803	806				PD00551	R 770		RS1/10S473J	
IC 807					NJM3404AM	R 771		RS1/10S123J	
IC 808					V-16M934-D110	R 772		RS1/10S104J	
IC 809					MC74HCU04F	R 774 972		RS1/10S101J	
IC 810					PD0075	R 801 802 804 806 807 808 810 812 825 826		RA3C102J	
IC 811	813				TC9237F	R 803 805 809 811 827 829 833 835		RA2CQ102J	
IC 812	814				TA2009F	R 824 845		RS1/10S102J	
IC 815					CS5339-KS	R 828 830 831 832 834 836		RA3C102J	
IC 816					UPC4570G	R 838 839		RS1/10S102J	
Q 702					2SA1162	R 846 847 850		RS1/10S102J	
Q 703					DTC143EK	R 849		RS1/10S222J	
Q 801					2SC2712	R 851 853 854 954		RS1/10S103J	
Q 802					DTC144TK	R 855		RS1/10S223J	
Q 803					DTA124EK	R 856 857 858 869		RS1/10S102J	
D 701	702	703	704	705	MA153-MC	R 859		RS1/10S682J	
D 801	804				MA110-1A	R 860 870		RS1/10S470J	
D 802					MA153-MC	R 861		RS1/10S103J	
D 803					MA151WK-MT	R 863 864 963		RS1/10S472J	
L 801	802	803	804	Inductor	CTF1197	R 867 895		RS1/10S473J	
L 805	807			Inductor	CTF1197	R 868		RS1/10S392J	
L 808	809			Inductor	CTF1197	R 873 896		RS1/10S0R0J	
L 875						R 875		RS1/10S0R0J	
L 810				Inductor	CTF1197	R 876		RS1/10S473J	
L 811	812			Inductor	LCTB39K2125	R 882		RS1/10S100J	
L 813				Inductor	LCTB120K2125	R 883 884		RS1/10S510J	
L 814				Inductor	LCTB120K2125	R 885 886		RS1/10S103J	
L 815				Inductor	LCTB2R7K2125	R 887 888		RS1/10S103J	
R 889						R 889 890		RS1/10S103J	
R 891						R 891 892		RS1/10S472J	
R 897						R 897 898 899 964		RS1/10S103J	
R 952						R 952 953		RS1/10S473J	
R 955						R 955 956		RS1/10S222J	
R 701					RS1/10S563J				
R 702					RS1/10S302J				
R 703					RS1/10S304J	R 957 958 959 960		RS1/10S100J	
R 707					RS1/10S472J	R 961 962		RS1/10S103J	
R 708					RS1/10S393J	R 965		RS1/10S103J	
R 967						R 967 970		RS1/10S102J	
R 968						R 968 969		RS1/10S103J	
R 709					RS1/10S152J				
R 710					RS1/10S154J				
R 714	721	728	735	742	749	756	RS1/10S104J	R 971	RS1/10S101J
R 715	729	743			RS1/10S333J				
R 716	730	751			RS1/10S132J				
R 717	731	745	752	759	RS1/10S134J	C 701 702 705 706		CKSYB823K50	
R 722					RS1/10S393J	C 703 704		CEV100M16	
R 723					RS1/10S152J	C 707 712 720 728		CEVR47M50	
R 724					RS1/10S154J	C 708 716 724 732		CSZSR47M20	
R 736	750				RS1/10S273J	C 709 710		CKSQYB473K50	

Circuit	Symbol	&	No.	Part	Name	Part No.	Circuit	Symbol	&	No.	Part	Name	Part No.			
C 711					CEV0R1M50		Q 703						DTC143EK			
C 713	714				CKSQYB223K50		Q 803						DTA124EK			
C 715					CKSQYB683K25		D 701	702	703	704	705	706	707	708	709	MA153-MC
C 717	718				CKSQYB123K50		L 801	802	803	804		Inductor		CTF1197		
C 719					CKSQYB333K50		L 808	809				Inductor		CTF1197		
C 721	722				CKSQYB682K50											
C 723					CKSQYB153K50		L 810					Inductor		CTF1197		
C 725	726				CKSQYB332K50		L 811	812				Inductor		LCTBR39K2125		
C 727					CKSQYB822K50		L 813					Inductor		LCTB120K2125		
C 729	730				CKSQYB152K50		L 814					Inductor		LCTB120K2125		
C 731					CKSQYB472K50		L 815					Inductor		LCTB2R7K2125		
C 733	734				CKSQYB821K50		X 801					Crystal Resonator		CSS1067		
C 735					CKSQYB222K50											
C 736					CSZS010M16							RESISTORS				
C 739					CEV220M16											
C 740					CEV101M10		R 701							RS1/10S563J		
C 741					CKSQYB102K50		R 702							RS1/10S302J		
C 742					CSZS010M16		R 703							RS1/10S304J		
C 743					CSZSR47M20		R 707							RS1/10S472J		
C 744					CSZSR100M6R3		R 708							RS1/10S393J		
C 745					CEV470M6R3		R 709							RS1/10S152J		
C 801	802	807	808	810	881	882	CKSQYB473K50		R 710					RS1/10S154J		
C 803	809				CEV470M6R3		R 714	721	728	735	742	749	756	RS1/10S104J		
C 804	806	812	879	880	CKSQYB473K50		R 715	729	743					RS1/10S333J		
C 805	811				CKSQYB103K50		R 716							RS1/10S132J		
C 813					CKSQYB103K50		R 717	759						RS1/10S134J		
C 814					CKSQYB221K50		R 722							RS1/10S393J		
C 815					CKSQYB102K50		R 723							RS1/10S152J		
C 816	821				CKSQYB222K50		R 724							RS1/10S154J		
C 818	827				CKSQYB473K50		R 730	751						RS1/10S132J		
C 819					CKSQYB103K50		R 731	745	752					RS1/10S134J		
C 822					CSZSR15M35		R 736	750						RS1/10S273J		
C 823	829	830			CSZST470M6R3		R 737							RS1/10S122J		
C 824	874	875			CKSQYB473K50		R 738							RS1/10S124J		
C 825	826				CCSQCH220J50		R 744							RS1/10S122J		
C 828					CCSQCH680J50		R 757							RS1/10S153J		
C 831					CKSQYB472K50		R 758							RS1/10S182J		
C 832	836	837	840	844	845		CEV470M6R3		R 763					RS1/10S184J		
C 833	834	841	842	843	872	878	883	886	893	CKSQYB473K50		R 765		RS1/10S103J		
C 835	884	885	894		CKSQYB473K50		R 766							RS1/10S560J		
C 838	839	846	847		CSZSR100M6R3		R 769							RS1/10S472J		
C 850					CSZSR100M6R3		R 770							RS1/10S473J		
C 851	859	873			CKSQYB473K50		R 771							RS1/10S123J		
C 852					CSZST470M6R3		R 772							RS1/10S104J		
C 853	854	855	856		CKSQYB103K50		R 774	972						RS1/10S101J		
C 857	858				CWV100M16		R 801	802	804	806	807			RA30102J		
C 862	864	891			CEV470M6R3		R 803	805	809	811				RA20Q102J		
C 860	863	865			CKSQYB473K50		R 808	810	812	825	826			RA30102J		
C 861					CSZSR6R8M6R3		R 827	829	833	835				RA20Q102J		
C 866	867				CCSQCH181J50		R 824	845						RS1/10S102J		
C 887	888	889	890		CSZST470M6R3		R 828	830	831	832	834	836		RA30102J		
C 892					CEV470M16		R 838	839						RS1/10S102J		
C 895	896				CCSQCH101J50		R 872							RS1/OS0R0J		
C 897					CCSQCH470J50		R 876							RS1/10S473J		
							R 882							RS1/10S100J		
Unit Number :							R 883	884						RS1/10S102J		
Unit Name :	DSP Unit(DEQ-7500/EW)						R 885	886						RS1/10S103J		
MISCELLANEOUS																
IC 701	702	703	704	705	RC4558MD		R 887	898	899	964				RS1/10S103J		
IC 710					M51304L		R 952	953						RS1/10S473J		
IC 711					TC4051BF		R 955	956						RS1/10S222J		
IC 801	802	804	805		MS51464-12JC		R 957	958	959	960				RS1/10S100J		
IC 803	806				PD00551		R 961	962						RS1/10S103J		
IC 811	813				TC9237F		R 966							RS1/10S103J		
IC 812	814				TA2009F		R 967	970						RS1/10S102J		
IC 815					CS5339-KS		R 968	969						RS1/10S103J		
IC 816					UPC4570G		R 971							RS1/10S101J		
Q 702					2SA1162											

Circuit Symbol & No. Part		Name	Part No.	Circuit Symbol & No. Part		Name	Part No.		
CAPACITORS									
C 701	702	705	706	CKSYB823K50			S-80734AN-DY		
C 703	704			CEV100M16	Q 1	51	2SC2712		
C 707	712	720	728	CEVR47M50	Q 55	56	2SC2712		
C 708	716	724	732	CSZSR47M20	Q 59	61	DTC343TK		
C 709	710			CKSQYB473K50	Q 60	62	DTC343TK		
C 711				CEVOR1M50	Q 63	163	DTA114EK		
C 713	714			CKSQYB223K50	Q 253	353	DTA114EK		
C 715				CKSQYB683K25	Q 451	458	2SD1864		
C 717	718			CKSQYB123K50	Q 454	503	2SB1278		
C 719				CKSQYB333K50	Q 456		2SB1434		
C 721	722			CKSQYB682K50	Q 502		DTC114EK		
C 723				CKSQYB153K50	Q 504		2SC2712		
C 725	726			CKSQYB332K50	Q 509		2SD2037		
C 727				CKSQYB822K50	Q 513	553	2SA1162		
C 729	730			CKSQYB152K50	Q 514	515	IMX3		
C 731				CKSQYB472K50	Q 551		2SA1162		
C 733	734			CKSQYB821K50	Q 552		2SC2712		
C 735				CKSQYB222K50	Q 557(US,ES)		DTA114TK		
C 736				CSZS010M16	D 1	3	MA151WK-MT		
C 739				CEV220M16	D 2		MA8068L		
C 740				CEV101M10	D 453		MA8056M		
C 741				CKSQYB102K50	D 454		MA3075H		
C 742				CSZS010M16	D 455		MA3068M		
C 743				CSZSR47M20	D 460		MA8091L		
C 744				CSZSR100M6R3	D 501		MA8110M		
C 745				CEV470M6R3	D 551		MA153-MC		
C 801	802	807	808	810	881	882	MA151WK-MT		
C 803	809			CKSQYB473K50	D 554	555(US,ES)			
C 804	806	812	879	880	CEV470M6R3	D 556 (EW)	MA110-1A		
C 805	811			CKSQYB103K50	L 1	2	CTF1007		
C 832	836	837	840	844	845	CKSQYB473K50	L 451	CTH1078	
C 833	834	841	842	843	872	878	CSZSR100M6R3	L 454	CTF1135
C 835	884	885	894			CKSQYB473K50	L 455	LCYA100K3225	
C 838	839	846	847			CSZSR100M6R3	X 551	CSS1071	
C 848	849			CCSQCH090D50	SW 51		CSH1009		
C 850				CEA100M16	SW501		CSG1020		
C 851	859	873		CSZSR100M6R3	EF 451	452	CCG1006		
C 852				CKSQYB473K50					
C 853	854	855	856	CSZST470M6R3	RESISTORS				
C 857	858			CKSQYB103K50	R 1	2	RS1/10S471J		
C 860	863	865		CEA100M16	R 11	12	RS1/10S473J		
C 861				CKSQYB473K50	R 13	14	RS1/10S912J		
C 862	864	891		CSZSR6R8M6R3	R 15	16	RS1/10S333J		
C 866	867			CEV470M6R3	R 23	34	RS1/10S102J		
C 887	888	889	890	CCSQCH181J50	R 25	35	RS1/10S104J		
C 892				CSZST470M6R3	R 27	29	RS1/10S753J		
C 895	896			CEV470M16	R 28	572	RS1/10S473J		
C 897				CCSQCH101J50	R 30	31	RS1/10S102J		
				CCSQCH470J50	R 32	59	RS1/10S472J		
Unit Number :		R		Unit Name :		R			
Unit Name : Audio P.C. Board		33		33		33			
MISCELLANEOUS		53		53		53			
IC 1		54		54		54			
IC 3	5	6	51	151	251	253	251		
IC 52	53	55	56	152	153	155	156		
IC 54	154			CKW1030	R 57	78	89		
IC 57	157			UPC4570G	R 79	80	90		
IC 252	352			M5238FP	R 101	102	105		
IC 451				TC9233F	R 119	120	121		
IC 453				RC2068MD1	R 121	221	361		
IC 551				MC14052BF	R 123	223	366		
IC 552				KHAA07	R 125	225	368		
				NJM78L12UA	R 127	227	369		
				PD4374C	R 129	229	371		
				PD3211B	R 131	231	373		
					R 133	233	375		
					R 135	235	377		
					R 137	237	379		
					R 139	239	381		
					R 141	241	383		
					R 143	243	385		
					R 145	245	387		
					R 147	247	389		
					R 149	249	391		
					R 151	251	393		
					R 153	253	395		
					R 155	255	397		
					R 157	257	399		
					R 159	259	401		
					R 161	261	403		
					R 163	263	405		
					R 165	265	407		
					R 167	267	409		
					R 169	269	411		
					R 171	271	413		
					R 173	273	415		
					R 175	275	417		
					R 177	277	419		
					R 179	279	421		
					R 181	281	423		
					R 183	283	425		
					R 185	285	427		
					R 187	287	429		
					R 189	289	431		
					R 191	291	433		
					R 193	293	435		
					R 195	295	437		
					R 197	297	439		
					R 199	299	441		
					R 201	301	443		
					R 203	303	445		
					R 205	305	447		
					R 207	307	449		
					R 209	309	451		
					R 211	311	453		
					R 213	313	455		
					R 215	315	457		
					R 217	317	459		
					R 219	319	461		
					R 221	321	463		
					R 223	323	465		
					R 225	325	467		
					R 227	327	469		
					R 229	329	471		
					R 231	331	473		
					R 233	333	475		
					R 235	335	477		
					R 237	337	479		
					R 239	339	481		
					R 241	341	483		
					R 243	343	485		
					R 245	345	487		
					R 247	347	489		
					R 249	349	491		
					R 251	351	493		
					R 253	353	495		
					R 255	355	497		
					R 257	357	499		
					R 259	359	501		
					R 261	361	503		
					R 263	363	505		
					R 265	365	507		
					R 267	367	509		
					R 269	369	511		
					R 271	371	513		
					R 273	373	515		
					R 275	375	517		
					R 277	377	519		
					R 279	379	521		
					R 281	381	523		
					R 283	383	525		
					R 285	385	527		
					R 287	387	529		
					R 289	389	531		
					R 291	391	533		
					R 293	393	535		
					R 295	395	537		
					R 297	397	539		
					R 299	399	541		
					R 301	401	543		
					R 303	403	545		
					R 305	405	547		
					R 307	407	549		
					R 309	409	551		
					R 311	411	553		
					R 313	413	555		
					R 315	415	557		
					R 317	417	559		
					R 319	419	561		
					R 321	421	563		
					R 323	423	565		
					R 325	425	567		
					R 327	427	569		
					R 329	429	571		
					R 331	431	573		
					R 333	433	575		
					R 335	435	577		
					R 337	437	579		
					R 339	439	581		
					R 341	441	583		
					R 343	443	585		
					R 345	445	587		
					R 347	447	589		
					R 349	449	591		
					R 351	451	593		
					R 353	453	595		
					R 355	455	597		
					R 357	457	599		
					R 359	459	601		
					R 361	461	603		
					R 363	463	605		
					R 365	465	607		
					R 367	467	609		
					R 369	469	611		
					R 371	471	613		
					R 373	473	615		
					R 375	475	617		
					R 377	477	619		
					R 379	479			

Circuit Symbol & No. Part		Name	Part No.	Circuit Symbol & No. Part		Name	Part No.
R 124	224		RS1/10S203J	C 89	90 189 190		CFTNA104J50
R 125	126 225 226		RS1/10S104J	C 91	191		CEA102M10L2
R 158	192 222 360 456 462		RS1/10S103J	C 96	196		CCSQCH100D50
R 181	182 187 188 269		RS1/10S333J	C 97	98 197 452 455 461 554 555		CKSQYB473K25
R 255			RS1/10S392J	C 193	194		CEA100M16LS2
R 256	257 355 358 359 529 532 535 538 587	RS1/10S104J	C 198	472			CKSQYB473K25
R 260	261 369 370 463 464	RS1/10S471J	C 255	256			CKSQYB223K25
R 262	371	RS1/10S223J	C 354				CEALNP100M16
R 264		RS1/10S751J	C 355	356 357			CFTNA184J50
R 265	267	RS1/10S202J	C 358				CFTNA474J50
R 268		RS1/10S392J	C 359				CKSQYB273K25
R 356	501 528 531 534 537 552 553 554 555	RS1/10S102J	C 360				CEALNP220M16
R 357		RS1/10S153J	C 451		6800 μ /16V		CCH1132
R 362		RS1/10S153J	C 453				CEAS471M16
R 363	367	RS1/10S153J	C 454	456 501 502			CEAS470M10
R 364	365 368	RS1/10S243J	C 464				CEAS101M16
R 372		RS1/10S104J	C 467		0.47 μ /5.5V		CCL1016
R 451		RS1/4S220J	C 468	469			CEAS470M16
R 454	506 556 557 558 559	RS1/10S472J	C 553				CSZS010M16
R 458		RS1/2S681J	C 556				CEA2R2M50LS2
R 460	512	RS1/4S122J	C 601	(US,ES)			CEAS330M16
R 465		RS1/10S100J	C 602	603(US,ES)			CKSQYB473K25
R 466	467 507 585	RS1/10S103J			Unit Number :		
R 502		RS1/10S182J			Unit Name : Display Unit		
R 504		RS1/2S561J					
R 505	621	RS1/10S103J			MISCELLANEOUS		
R 517	570 603	RS1/10S473J					
R 519	520 521 522 523	RS1/8S561J	IC 901				BX-1393
R 524	525	RS1/8S103J	IC 902				PD4334B
R 530	533 536 539	RS1/10S561J	IC 903				S-80740AH-B4
R 551		RS1/10S154J	IC 904	905			LC7582A
R 560	571	RS1/10S224J	Q 901				2SC4081
R 563	564	RS1/10S472J					MA143-MC
R 576	804	RS1/10S102J	D 902	903 904 905 906 907			MA110-1A
R 588	589 590 591 593 599 600 601 602	RS1/10S104J	D 908	909			LCTA101K4532
R 597	598(US,ES)	RS1/10S104J	L 901		Inductor		CSS1069
R 605(EW)			X 901		Ceramic Resonator		CSG1043
R 606	607 608 609 610 611 612 613	RS1/10S104J	S 901	902 903 904 905	Switch		CSG1043
R 614	615 616 617 622	RS1/10S104J	S 911	912 913 914 915	Switch		CSG1043
R 618	619 (EW)	RS1/10S103J	S 916	917 918 919 920	Switch		CSG1043
R 624		RS1/10S272J	IL 901	902 908 909	Lamp		CEL1286
R 630(US,ES)		RD1/4PS104JL	IL 903	904 905 906 907	Lamp		CEL1150
CAPACITORS			BZ 901		Buzzer		CPV1115
C 1	2 185 282 361 470 471	CKSQYB102K50	LCD901		LCD		CAW1186
C 3	4	CEAS101M50					
C 11	12 22 88 188 263 362	CEA4R7M35LS	R 902	903 911 913			RA3C103J
C 15	16 53 54 95 153 154 195 252 352	CCSQCH100D50	R 904				RS1/DS470J
C 17		CEAS221M10	R 905				RS1/DS103J
C 21	25 26 27 83 84 93 94 183 184	CEA100M16LS2	R 908				RA2CQ471J
C 23	24 81 82 181 182	CEA470M10LS	R 909				RA3C471J
C 55	56 155 156 251 253 254 261 351 353	CEALNP100M16	R 910	912			RS1/DS104J
C 59	60 159 160	CEALNP4R7M35	R 915				RS1/DS472J
C 63	64 163 164	CEALNP2R2M35	R 918				RS1/DS473J
C 65	66 165 166	CEALNPR33M50	R 919	920 921			RS1/DS473J
C 67	68 167 168	CEALNPR68M50			CAPACITORS		
C 69	70 169 170	CKSQYB333K25	C 901	905			CSZS1470M6R3
C 71	72 171 172	CKSQYB103K25	C 902	906 907			CKSQYB103K50
C 73	74 173 174	CKSQYB561K50	C 903	904			CCS0CH221J50
C 75	76 175 176	CCSQCH330J50	C 908	909 910 911			CKSQYB471K50
C 77	177	CKSQYB393K25	C 912	913			CCS0CH331J50
C 78	178	CCSQCH101J50					
C 79	80 179 180	CEA010M50LS2					
C 85	86 186	CKSQYB102K50					

24. PACKING METHOD

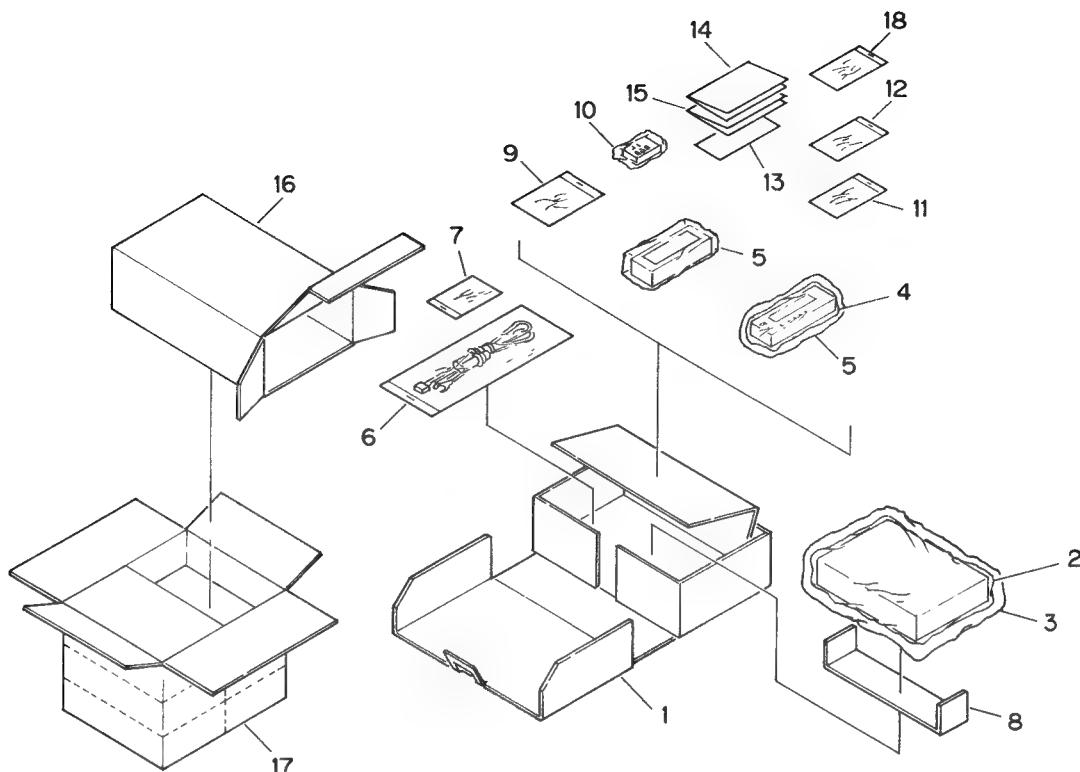


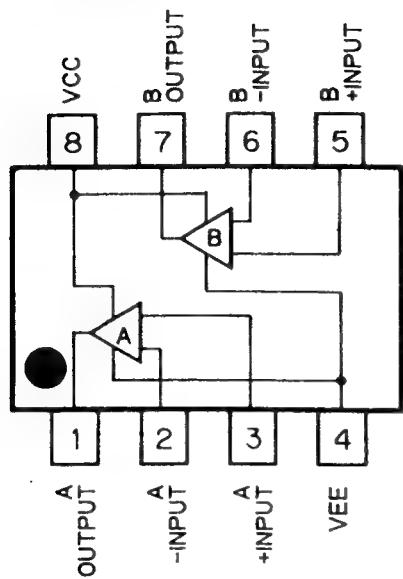
Fig. 23

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Carton	CHG2217	11	Accessory Assy	CBA1473
2	Cover	CHG1086	* 11-1	Polyethylene Bag	CEG-127
3	Air Cushioned Bag	CEG1117	* 11-2	Battery	CEX1006
4	Cover	CHG1064	11-3	Fastener (Rough)	CNM3249
5	Air Cushioned Bag	CEG1118	11-4	Fastener (Soft)	CNM3250
6	Cord Assy (US, ES)	CDE3748	12	Accessory Assy (US, ES)	CEA1718
	Cord Assy (EW)	CDE3749	12-1	Screw (×4)	BMZ26P040FZK
*	7 Accessory Assy	CEA-782	12-2	Screw (×2)	BMZ30P060FZK
	7-1 Screw (×4)	BNC50P160PMC	12-3	Screw (×2)	BMZ40P060FZK
	7-2 Split Pin (×4)	B20-223	7-3	Screw (×5)	CBA-101
	7-4 Screw (×4)	CBA-102	12-4	Screw (×2)	RCW41P160FZK
*	7-5 Cord	CDE1289	12-5	Spring	CBH-865
*	7-6 Polyethylene Bag	E36-613	* 12-6	Polyethylene Bag	CEG-127
	7-7 Nut (×4)	NF50FMC	* 13	Card (US, ES)	ARY1048
	7-8 Washer (×4)	WA45F130M080	* Card (EW)	ARY-062	
*	8 Mounting Bracket	CNB-720	14	Owner's Manual (US)	CRB1248
	9 Air Cushioned Bag	CEG1052		Owner's Manual (EW)	CRD1593
	9-1 Bracket	CNC4290		Owner's Manual (ES)	CRD1594
	9-2 Bracket	CNC4291	15	Owner's Manual (EW)	CRD1603
	9-3 Fastener (×2) (Rough)	CNM1716	16	Carton (US)	CHG2220
	9-4 Fastener (×2) (Soft)	CNM1717		Carton (EW)	CHG2218
	9-5 Fastener (×2)	CNM-667		Carton (ES)	CHG2219
	10 Remote Control Assy (US)	CXA4874	17	Contain Box (US)	CHL2220
	Remote Control Assy (EW, ES)	CXA4690	18	Screw Assy (EW)	CEA1717
			18-1	Screw (×2)	BMZ30P060FZK
			18-2	Screw (×2)	BMZ40P060FZK
			18-3	Screw (×2)	RCW41P160FZK

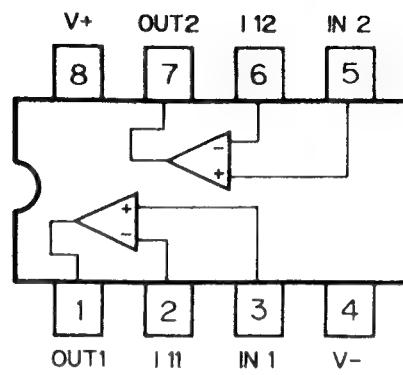
Part No.	Language
CRB1248	English
CRD1593	English, French, German, Spanish
CRD1594	English, French, Spanish, Arabic
CRD1603	Swedish, Norwegian, Italian, Finnish, Dutch

• ICs

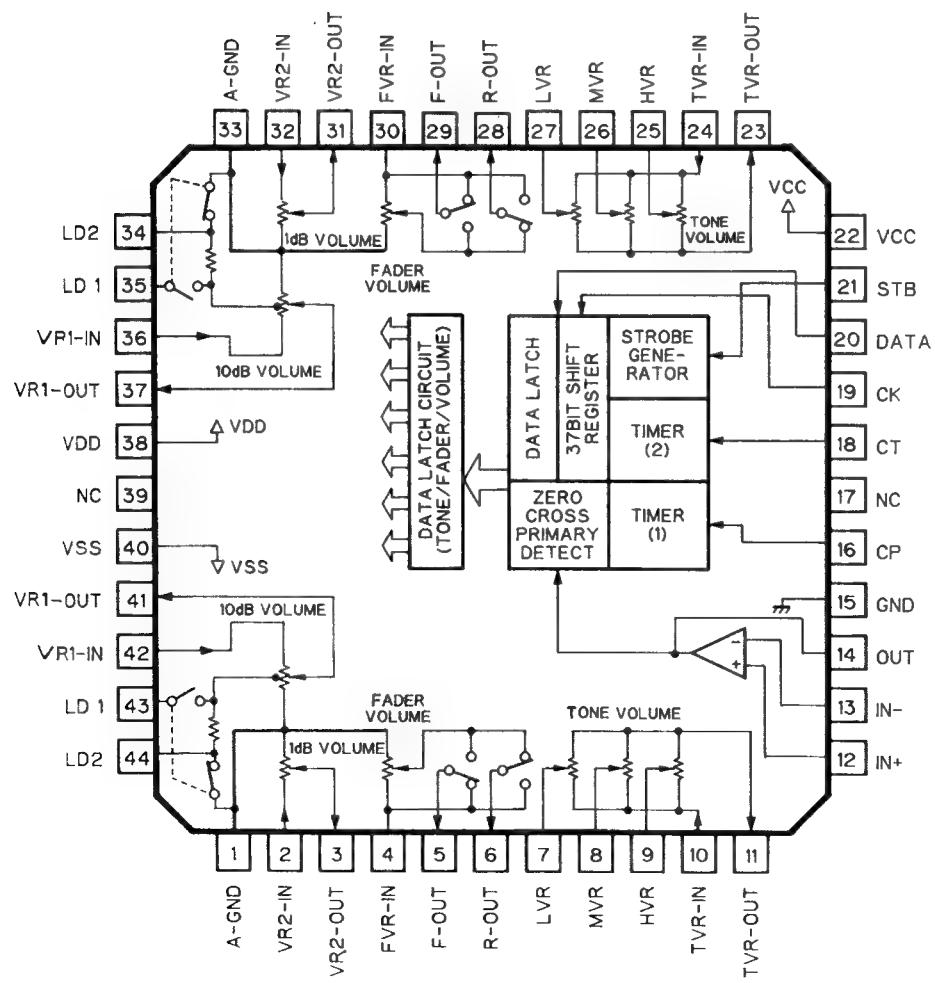
UPC4570G, M5238FP



RC2068MD1, RC4558MD



TC9233F

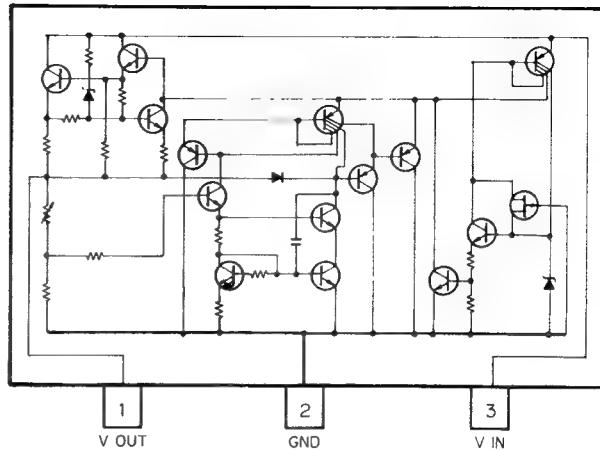
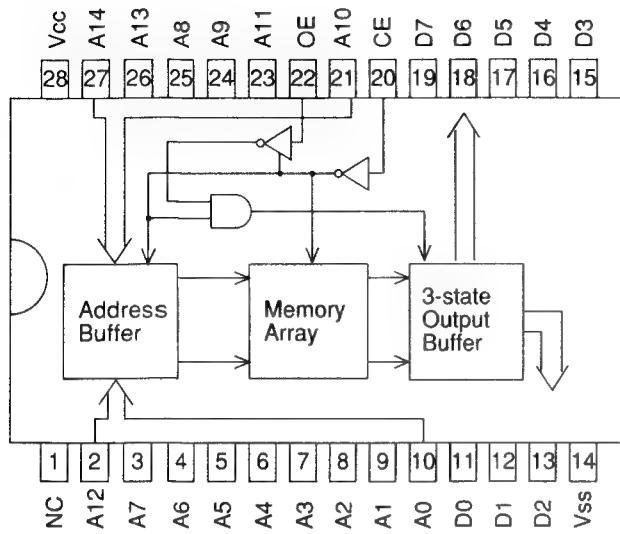


*PD3211B

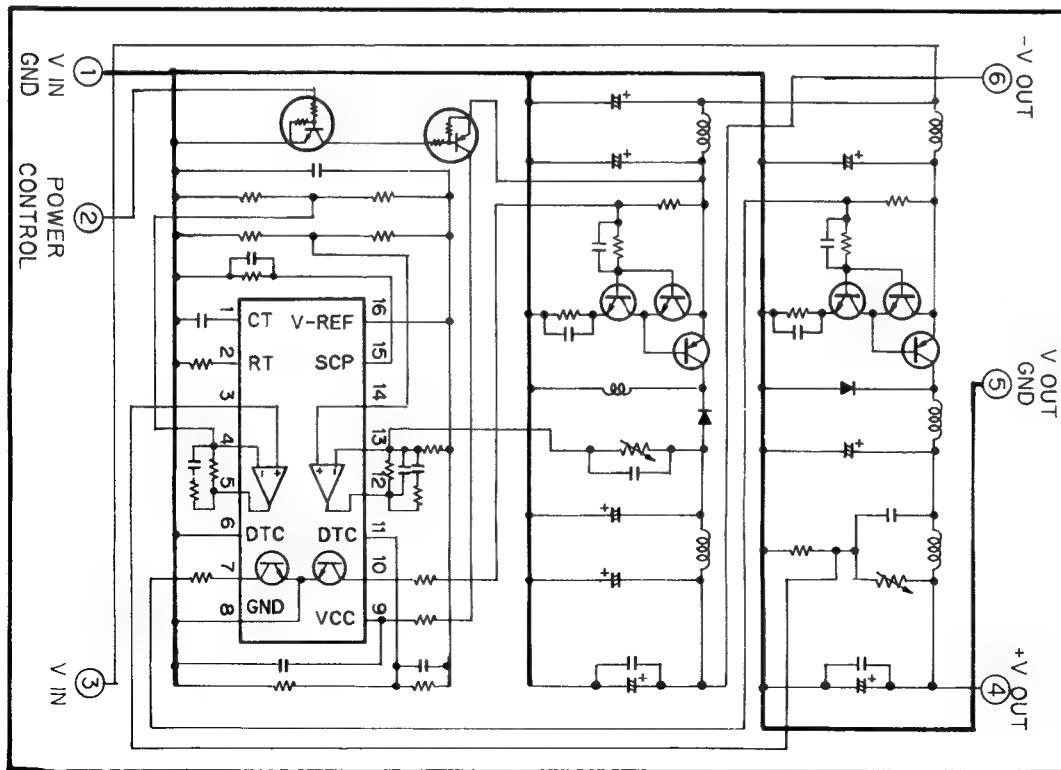
IC's marked by * are MOS type.

Be careful in handling them because they are very liable to be damaged by electrostatic induction.

NJM78L12UA

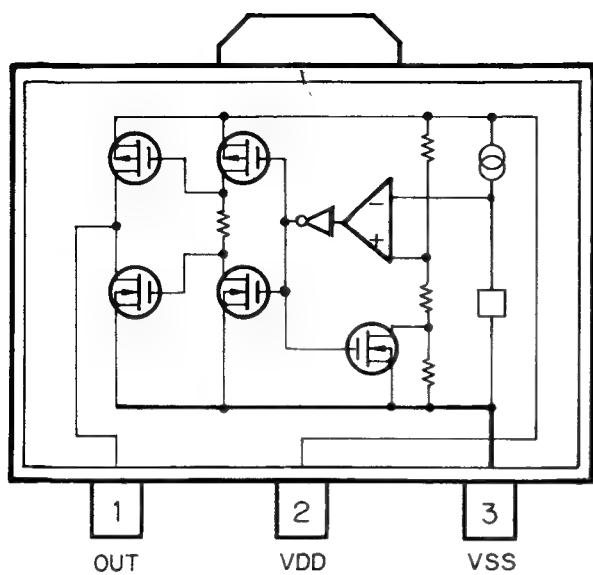


KHAA07



S-80734AN-DY,
S-80740AH-B4

*PD4374C



1	A/DIN	80	7.9
2	AVREF	7.8	LIMIT
3	VDD	7.7	DB8
4	VDD	7.6	DB1
5	AVREFOUT	7.5	DB2
6		7.4	DB3
7	AB13	7.3	AVSS
8	AB12	7.2	DB4
9	AB11	7.1	DB5
10	AB10	7.0	DB6
11	AB9	6.9	DB7
12	AB8	6.8	CNT
13	AB7	6.7	DB/ADC
14	AB6	6.6	EMPH
15	AB5	6.5	DS/DT
16	AB4	5.9	RESET
17	EMPHIN	5.8	
18	ERR2	5.7	
19	ERR1	5.6	
20	PEE	5.5	
21	AB3	5.4	
22	AB2	5.3	
23	AB1	5.2	
24	AB0	5.1	
25	ARD	5.0	
26	RCF	4.9	
27	DILM	4.8	
28	ILMPW	4.7	
29	VST	4.6	
30	VOT	4.5	
31	VCK1	4.4	
32	VCK0	4.3	
33	GND	4.2	
34	CEN1	4.1	
35	CEN0		
36	SUB1		
37	SUB0		
38	LTHH		
39	SUBPW		
40	SYSPW		

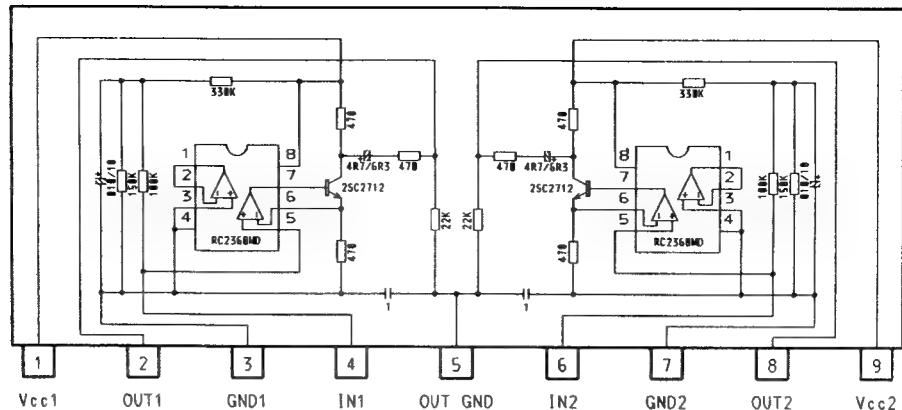
• Pin Functions (PD4374C)

Pin	Pin name	I/O	Output Format	Function
1	A/DIN	A/D		A/D Converter input pin
2	AVREF			A/D converter reference voltage
3	VDD			Power supply
4				
5	AVREFOUT	output	C	A/D converter reference voltage output
6	INC	output	C	Not used
7	AB13	output	C	Memory address output
8				
9	AB12	output	C	Memory address output
10	AB11	output	C	Memory address output
11	AB10	output	C	Memory address output
12	AB9	output	C	Memory address output
13	AB8	output	C	Memory address output, A/D switching output
14				
15	AB7	output	C	Memory address output
16	AB6	output	C	Memory address output
17	EMPHIN	input		Emphasis input
18	ERR2	input		Error 2 input
19	ERR1	input		Error 1 input
20	PEE	output	C	Beep tone output
21	AB3	output	C	Memory address output
22				
23	AB2	output	C	Memory address output
24	AB1	output	C	Memory address output
25	FRS	output	C	Memory read strobe output
26	RCF	output	C	Memory chip select output
27	DILM	output	C	Dial illumination selector output
28	ILMPW	output	C	Illumination power control output
29	VST	output	NI	E-VOL strobe
30	VOT	output	NI	E-VOL data
31	VCK1	output	NI	E-VOL clock (Rear)
32	VCK0	output	NI	E-VOL clock (Front)
33	GND			GND
34	CEN1	output	C	Center speaker f0 control
35	CEN0	output	C	Center speaker f0 control

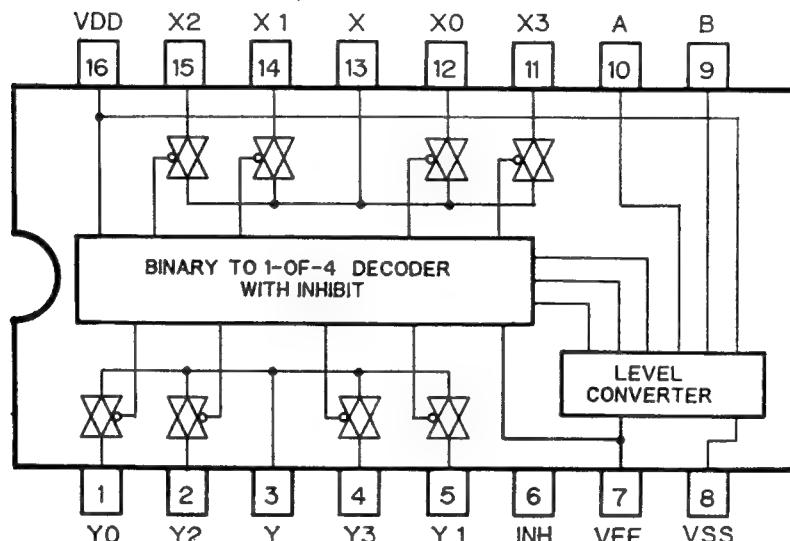
Pin	Pin name	I/O	Output Format	Function
36	SUB1	output	C	Sub woofer f0 control
37	SUB0	output	C	Sub woofer f0 control
38	LINR	output	C	LCD control inhibit output
39	SUPPW	output	C	Control output for grille power supply
40	SYSPW	output	C	System power supply control
41	ROUTE	output	C	Mute output
42	LOCK	output	NM	LCD driver clock output
43	LDT	output	NM	LCD driver data output
44	LOC1	output	NM	LCD control chip select output
45	LCE2	output	NM	LCD control chip select output
46	DSENS	input		Grille connector remove/replace sensor input
47	BTB	input		BTB input
48	BSENS	input		Back up power sense
49	REMIN	input		Remote control input
50	MOLSEN	input		Destination selection input
51	SDT	output	N	DSP serial data
52	SDC	output	N	DSP serial clock
53	DSPRDY	input		DSP ready input
54	GND			GND
55	XT1			Connector to ground
56	XT2			Open
57	IC			Connector to ground
58	X1			Crystal oscillating element connection pin
59	X2			
60	RESET			Reset input
61	DSPEN1	output	NM	DSP chip enable output
62	DSPEN2	output	NM	DSP chip enable output
63	DSPA/D	output	NM	DSP address/date switching output
64	DSPRST	output	NM	DSP reset output
65	DSPMOT	output	NM	DSP mute output
66	EMPH	output	NM	Emphasis output
67	DTR/ADC	output	NM	DTR/ADC switching output
68	CNTR	output	NM	DTR count clock
69	DB7	input		
70	DB4			Memory data input
71				
72				
73	A/D			Ground voltage of A/D converter
74	DB3	input		
75	DB0			Memory data input
76				
77				
78	LIMIT	A/D		Audio signal. Over input detector
79	NC	A/D		Not used
80				

Output Format	Meaning
C	C-MOS
N	N channel open drain
NM	Middle resistivity N channel open drain

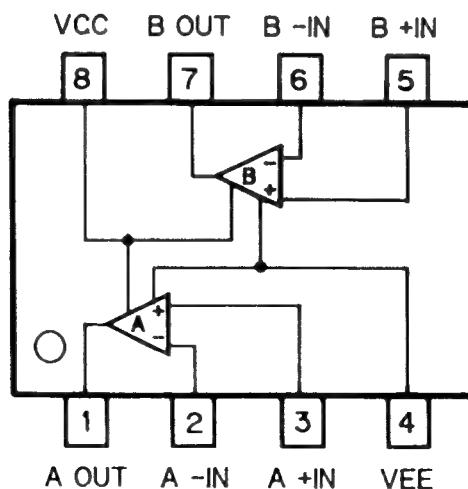
CWV1030



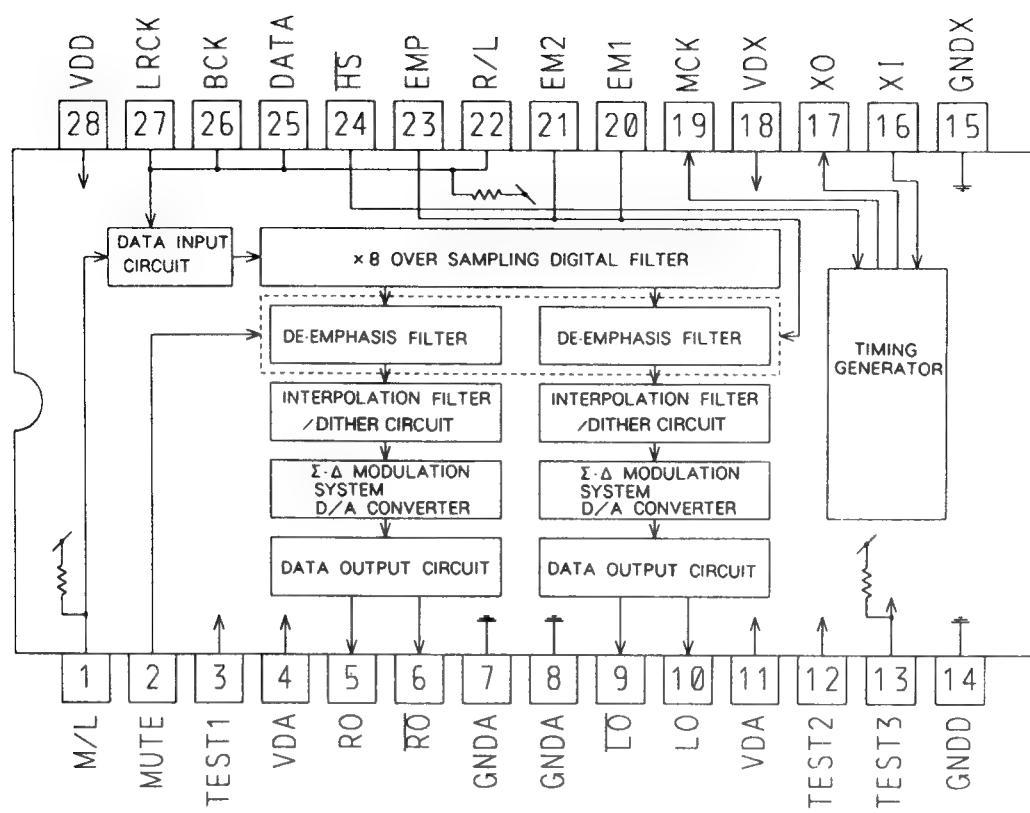
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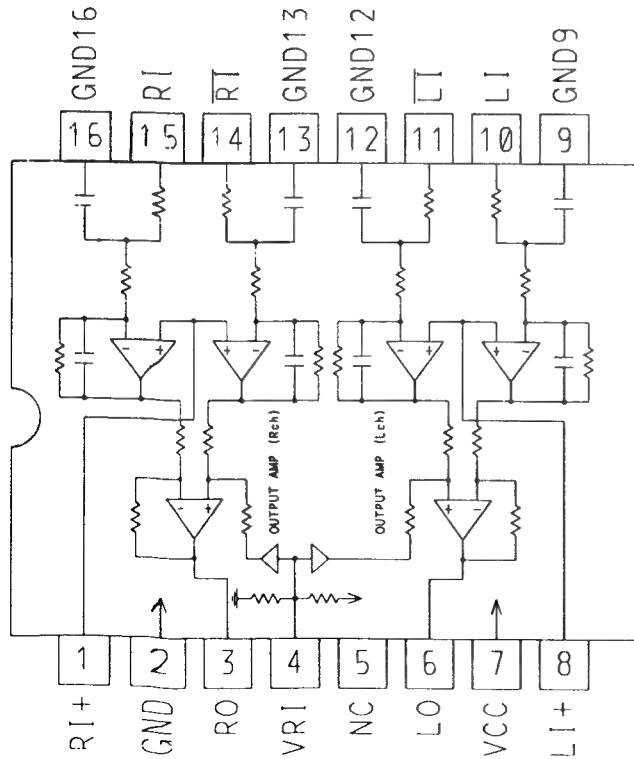
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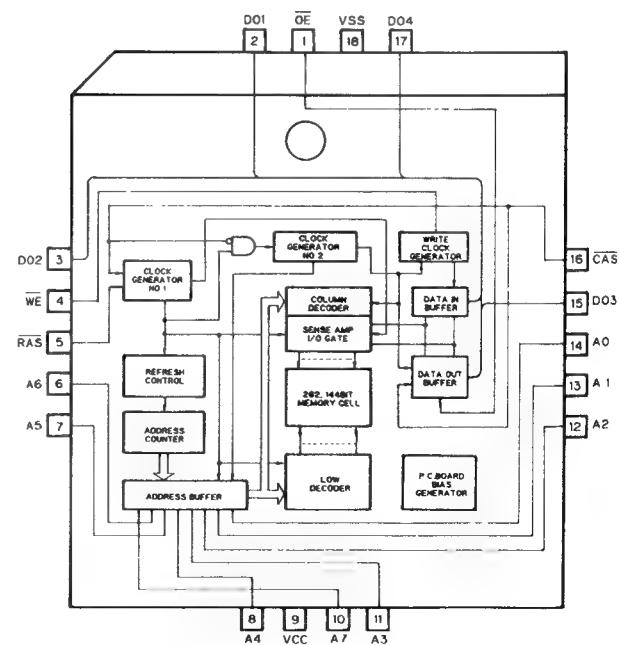
TC9237F



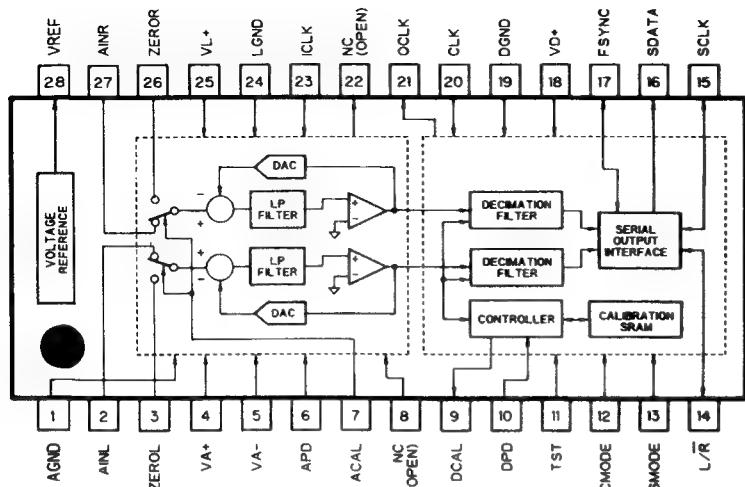
TA2009F



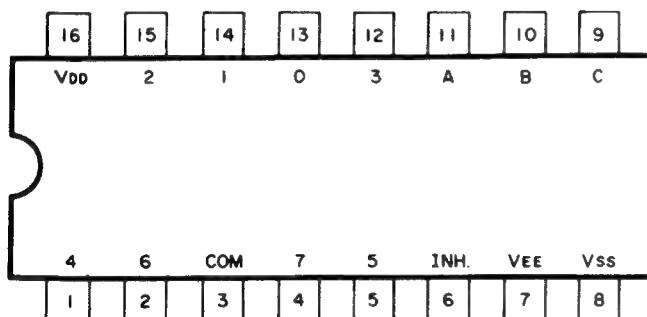
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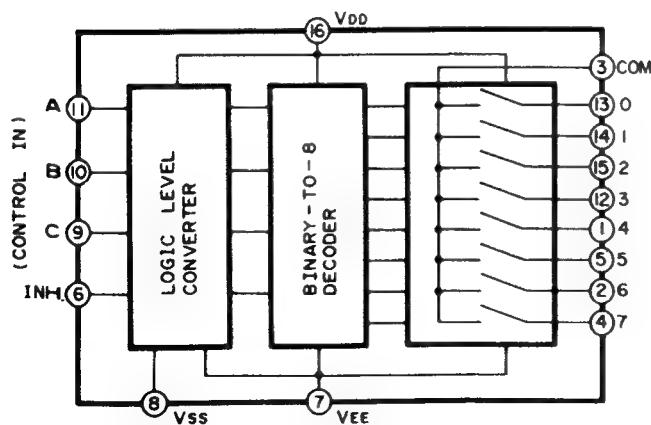
CS5339-KS



TC4051BF

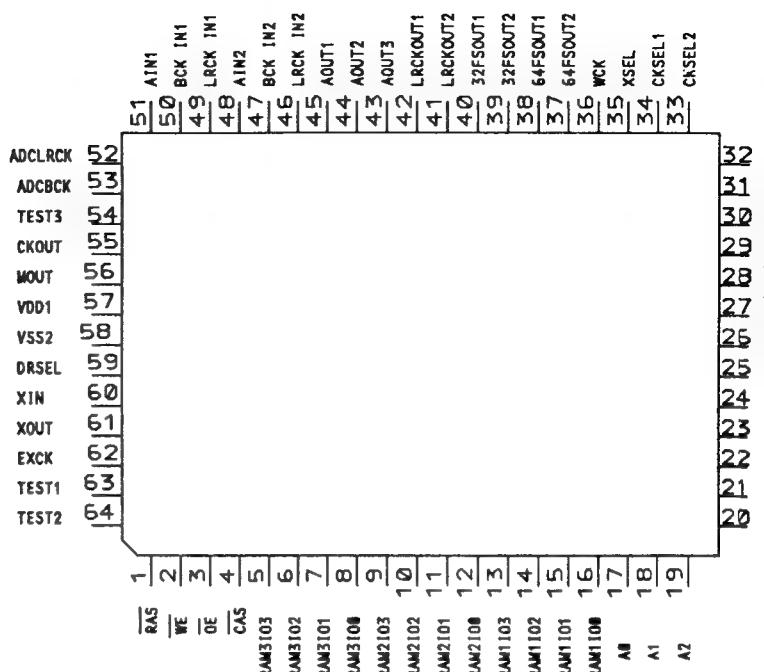
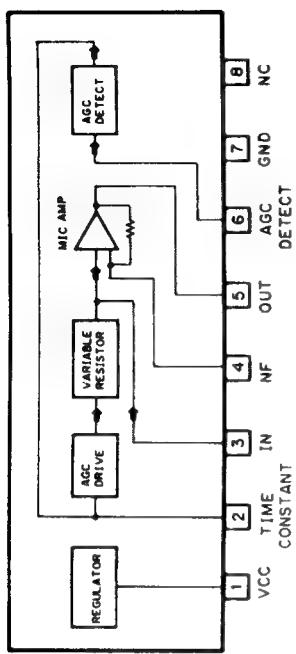


Control input				CH.
INH.	C	B	A	
L	L	L	L	0
L	L	L	H	1
L	L	H	L	2
L	L	H	H	3
L	H	L	L	4
L	H	L	H	5
L	H	H	L	6
L	H	H	H	7



M51304L

*PD00551

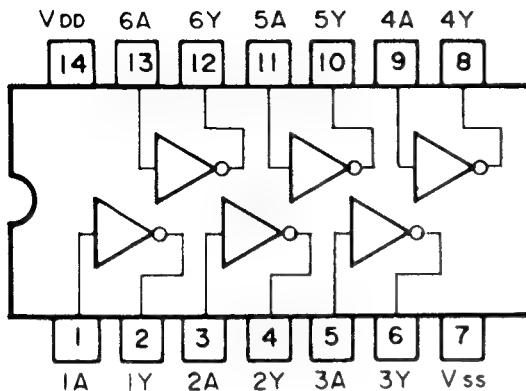


• Pin Functions (PD00551)

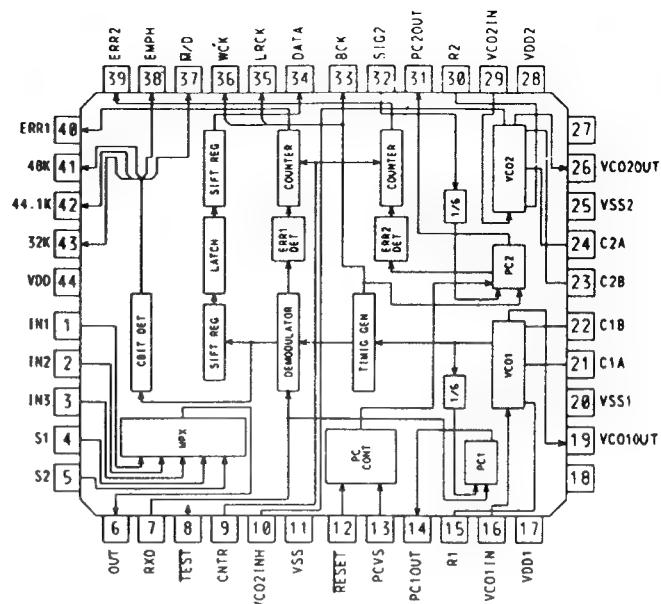
Pin	Pin Name	I/O	Function and Operation
1	<u>RAS</u>	O	Low address strobe terminal for external DRAM
2	<u>WE</u>	O	Write enable terminal for external DRAM
3	<u>OE</u>	O	Output enable terminal for external DRAM
4	<u>CAS</u>	O	Column address strobe terminal for external DRAM
5	RAM3IO3	I/O	Data I/O terminal for external DRAM
8	RAM3IO0		
9	RAM2IO3	I/O	Data I/O terminal for external DRAM
12	RAM2IO0		
13	RAM1IO3	I/O	Data I/O terminal for external DRAM
16	RAM1IO0		
17	A0	O	Address output terminal for external DRAM
24	A7		
25	VSS1		Ground terminal
26	VDD2		Power supply terminal
27	<u>RESET</u>	I	Reset signal input terminal
28	<u>DRDY</u>	O	Micro processor I/F data reception enable output terminal
29	<u>RDATA</u>	I	Micro processor I/F data input terminal
30	<u>RCK</u>	I	Micro processor I/F clock pulse input terminal

Pin	Pin Name	I/O	Function and Operation
31	A/D	I	Micro processor I/F address data discrimination input terminal
32	CS	I	DASP chip select input terminal
33	CKSEL2	I	Select terminal for clock pulse output from CKOUT
34	CKSEL1	I	Select terminal for master clock pulse frequency
35	XSEL	I	Select terminal for oscillation/external clock pulse
36	WCK	O	Word clock pulse output terminal
37	64FSOUT2	O	64FS bit clock pulse output terminal
38	64FSOUT1		
39	32FSOUT2	O	32FS bit clock pulse output terminal
40	32FSOUT1		
41	LRCKOUT2	O	LR clock pulse output terminal
42	LRCKOUT1		
43	AOUT3	O	Lch, Rch audio serial data output terminal
45	AOUT1		
46	LRCKIN2	I	LR clock pulse input terminal 2 for reading in audio serial data
47	BCKIN2	I	Bit clock pulse input terminal 2 for reading in audio serial data
48	AIN2	I	Lch, Rch audio serial data input terminal 2
49	LRCKIN1	I	LR clock pulse input terminal 1 for reading in audio serial data
50	BCKIN1	I	Bit clock pulse input terminal 1 for reading in audio serial data
51	AIN1	I	Lch, Rch audio serial data input terminal 1
52	ADCLRCK	O	LR clock pulse output terminal to A/D converter
53	ADCBCK	O	Bit clock pulse output terminal to A/D converter
54	TEST3	I	Test mode terminal
55	CKOUT	O	Internal system clock pulse or master clock pulse 3/2 division output terminal
56	MOUT	O	Master clock pulse output terminal
57	VDD1		Power supply
58	VSS2		Ground
59	DRSEL	I	DRDY logic select terminal
60	XIN	I	Crystal oscillator connection terminal
61	XOUT	O	Crystal oscillator connection terminal
62	EXCK	I	External clock pulse input
63	TEST1	I	Test mode terminal
64	TEST2	I	Test mode terminal

TC74HCU04AF



*PD0075

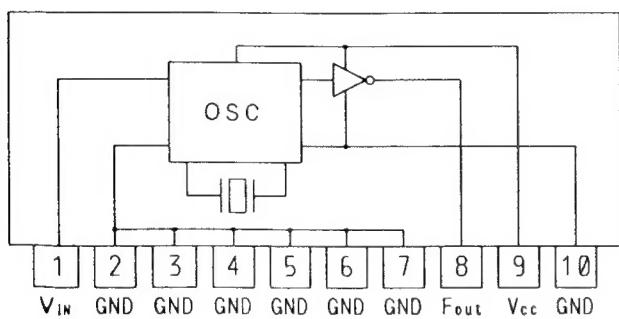


• Pin Functions (PD0075)

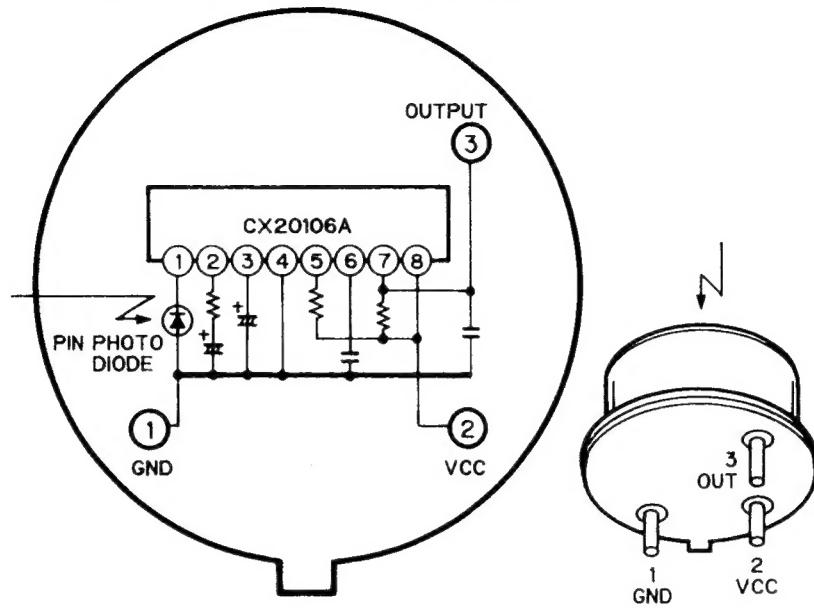
Pin No.	Pin Name	I/O	Function and Operation
1	IN1	Input	Data input 1.
2	IN2	Input	Data input 2.
3	IN3	Input	Data input 3.
4	S1	Input	Input selector 1. (TTL level)
5	S2	Input	Input selector 2. (TTL level)
6	OUT	Output	Data MPX output.
7	RXD	Input	Data input. Normally connected to OUT(CMOS level).
8	TEST	Input	Test mode input. Normally fixed at "H". (TTL level)
9	CNTR	Input	Counter clock input for ERR1/2 output time(CMOS level).
10	VC02 INH	Input	For VC02 oscillation stop. Oscillation stop at "H". (TTL level)
11	VSS		Logic VSS.
12	RESET	Input	Power ON reset input.
13	PCVS	Input	VC01/2 self-run frequency setting input.
14	PC10UT	Output	Phase comparator 1 output.
15	R1		VC01 regulating resistor connection terminal.
16	VC01 IN	Input	VC01 control voltage input.
17	VDD1		VC01 VDD.
18			Not used.
19	VC01 OUT	Output	VC01 output. (384fs)
20	VSS1		VC01 VSS.
21	C1A		VC01 regulating capacity connection terminal.
22	C1B		VC01 regulating capacity connection terminal.
23	C2B		VC02 regulating capacity connection terminal.
24	C2A		VC02 regulating capacity connection terminal.
25	VSS2		VC02 VSS.
26	VC02 OUT	Output	VC02 output. (384fs)
27			Not used.

Pin No.	Pin Name	I/O	Function and Operation
28	VDD2		VCO2 VDD.
29	VCO2IN		VCO2 control voltage input.
30	R2		VCO2 regulating resistor connectin terminal.
31	PC2OUT	Output	Phase comparator 2 output.
32	SIG2	Input	V input of phase comparator 2. Normally connected to VCO2OUT.
33	BCK	Output	Demodulation data bit clock output.
34	DATA	Output	Demodulation audio data output.
35	LRCK	Output	Demodulation data L/R channel output. L channel at "H".
36	WCK	Output	Demodulation data word clock output.
37	M/D	Output	MUSIC/DATA selection information output. MUSIC at "L"
38	EMPH	Output	Emphasis information output. With emphasis at "H".
39	ERR2	Output	2nd PLL UNLOCK output. UNLOCK at "H".
40	ERR1	Output	1st PLL data read error output. Error at "H".
41	48K	Output	Sampling frequency information output. Open drain for LED driver. Active at "L".
42	44.1K	Output	Sampling frequency information output. Open drain for LED driver. Active at "L".
43	32K	Output	Sampling frequency information output. Open drain for LED driver. Active at "L".
44	VDD		Logic VDD.

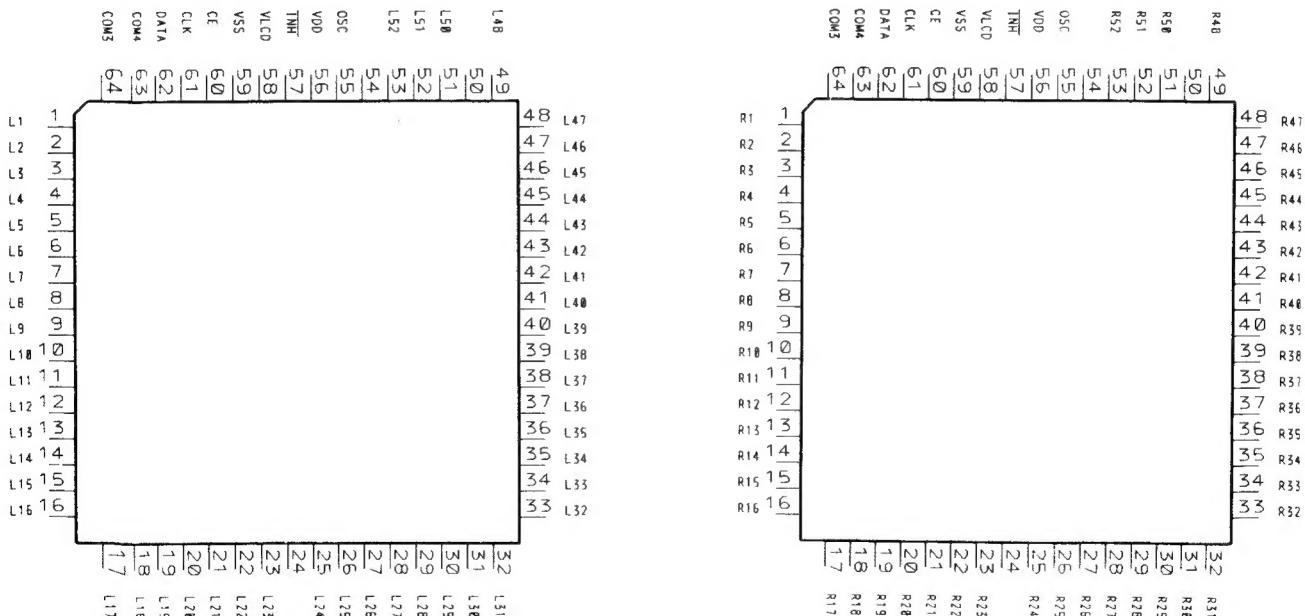
V-16M934-D110



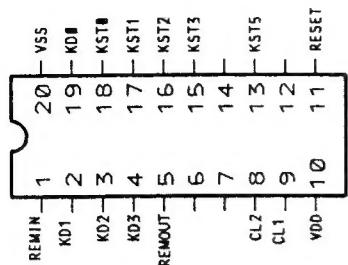
BX-1393 (BOTTOM VIEW)



*LC7582A



*PD4334B



• Pin Functions (PD4334B)

Pin	Pin name	I/O	Output Format	Function
1	REMIN	input		Remkote control input
2-4	K01-K03	input		Key matrix date input
5	REMOUT	output	NM	Key microcomputer outputs
6-7	NC	output	NM	Not used
8	CL2			System clock
9	CL1	input		System clock
10	VDD			Power supply
11	RESET	input		Reset input
12-18	KST6-KST8	output	NM	Key strobe output
19	K00	input		Key matrix date input
20	VSS			GND

Output Format	Meaning
NM	Middle resistivity N channel open drain

SAFETY INFORMATION

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.